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2014 - 2016 Progress Report: Hazard Mitigation in North Dakota

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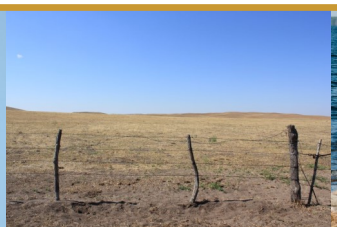
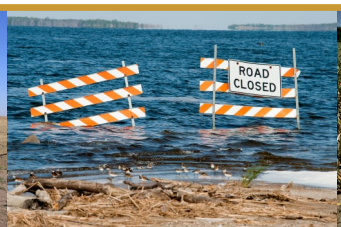

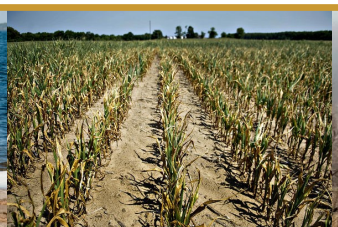


Table of Contents

Executive Summary

Cody Schulz, Disaster Recovery Chief
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In North Dakota, our statewide emergency management system emphasizes the use of effective mitigation strategies, and it is an investment that is paying big dividends in terms of safer communities.

Mitigation is the implementation of projects that ultimately protect our communities, reduce risk to human life and safety, and hopefully save federal, state, and local dollars that would have been spent on response and recovery efforts.

Always a priority with the N.D. Department of Emergency Services (NDDES), our mitigation program was revitalized within the past five years to ensure mitigation efforts are constantly being utilized to the best of the state's and communities' capabilities. Success has required the expertise and support of a broad-based team of local, tribal, state, federal and private partners.

This document, *2014-2016 Progress Report: Mitigation in North Dakota,* summarizes recent accomplishments by our team to achieve our mitigation goals and to ensure the *2014 State Of North Dakota Multi-Hazard Mitigation Plan* continues to serve as a useful blueprint for building a disaster resilient state.

The Need for Mitigation

North Dakota's disaster history speaks volumes about our state's vulnerabilities to disasters. Since 1993, North Dakota has received 38-presidentially declared emergencies and disasters, three of which have been for catastrophic floods. While floods are the most repetitive disaster in North Dakota, federal declarations have also been issued for severe winter storms, severe summer weather and fires. There have been several other events in the past few years that have been extremely detrimental to the state, but did not fit parameters of federal declarations.

Our most recent Presidentially-declared disaster, FEMA-DR-4323, resulted from widespread spring flooding in north central and northeastern North Dakota that began on February 17, 2017, with the first report of flooding, and continued for more than two months until April 29, 2017, when overland floodwaters receded and the majority of rivers fell below flood stage.

While the impacts of the 2017 spring flood have been detrimental for north central and northeastern communities, the estimated $3.25 million in damages and associated costs would have been far greater if not for our state's results-driven hazard mitigation program. Public and private partners have enacted several mitigation projects that have greatly reduced damages experienced by residents and their communities.

These projects have included the elevation of critical infrastructure, development of permanent flood protection, and the relocation of individuals and families from harm's way. With the assistance of the Unified Hazard Mitigation Assistance (HMA) Programs, ND State Water Commission (SWC) funding and Community Development Block Grants (CDBG), the state has created green space along rivers and lakes by acquiring 1,400 flood-prone properties, many of which were located in areas that flooded this spring. The losses avoided amount to approximately $386,400,000 using the national pre-determined benefit amount of $276,000 per property, while the protection of North Dakota residents has been immeasurable.

It's Starts with a Plan

Multi-hazard mitigation plans (MHMPs) provide the foundation for a mitigation program. A FEMA approved MHMP is also a requirement for communities to be eligible for federal mitigation program dollars. Our outreach efforts emphasize mitigation plan development as a means for communities to understand risk and vulnerability in relation to natural and technological hazards and adversarial threats, and to use risk assessments to identify viable mitigation projects.

Five years ago, approximately one-half of the state's jurisdictions had mitigation plans. Today, every county and tribal nation have federally approved plans or have plans that are under development. The NDDES Mitigation staff support efforts by providing technical assistance, discussing mitigation planning with communities, and conducting plan reviews to ensure compliance with federal requirements.

We also work with FEMA mitigation staff to tailor the G318 Mitigation Planning Workshop to meet the needs of our local and tribal planning teams. The course, offered biennially, provides the participants insights into the fundamentals of mitigation planning. Guest speakers have addressed issues of concern to our planning teams such as floodplain management, historical and cultural considerations, fire management and the impacts of tornadoes. We are now incorporating field trips to allow class participants an opportunity to apply their skills and develop effective mitigation strategies in the real world.

Putting Mitigation to Work

Communities throughout the state have already been benefitting by investing in mitigation activities. Resiliency measures have included such initiatives as lift station elevations/relocations, permanent flood protection, overhead line burials, sewer system improvements, and the installation of river gauges, early warning sirens, and emergency generators for critical facilities and shelters. Our State Hazard Mitigation Officer, Justin Messner, who is a Certified Floodplain Manager (CFM), works with his counterparts at the State Water Commission to support floodplain mapping and flood mitigation measures.

Between the 2009 and 2011 floods, approximately $100 million in federal funds through the Hazard Mitigation Assistance programs have been leveraged for the protection of our state infrastructure and communities. NDDES is committed to the utilization of effective mitigation measures whenever possible, which also applies to Public Assistance (PA) damage sites that are part of a federally-declared disaster event. NDDES will continue to incorporate hazard mitigation measures into as many PA damage sites as possible to prevent similar damages from occurring in future disasters.

This report includes a section, *Mitigation at Work: Leveraging Federal Funding,* which outlines several projects that have been funded through HMA. They include our largest project to date, the Minot Water Treatment Plant Flood Protection, estimated to cost more than $30 million for a three-quarter mile earthen levee and concrete flood wall. The report also spotlights other large and small projects including our first pre-cast concrete storm shelter installed at Graner Park in southern Morton County.

While HMA is a major source of mitigation funding, our communities pursue other avenues of funding as well. Some projects, such as public awareness campaigns or purchasing weather radios for schools, cost little to enact and are completed by our local communities without any financial assistance. Others, like Ward County's efforts following the 2011 flood, required funding from HMA, the State Water Commission and the state-funded Housing Rehabilitation and Citizen Retention Grant to rebuild their communities and enact mitigation measures whenever possible. The City of Minot has even received $74.3 million from the U.S. Housing and Urban Development's National Disaster Resilience Competition.

This report highlights other projects where communities are committed to finding solutions to repetitive disasters by leveraging such programs as the Silver Jackets, a collaborative effort led by the State Water Commission and the U.S. Army Corps of Engineers. Other partners supporting efforts include NDDES, the Federal Emergency Management Agency, Natural Resources Conservation Service, National Weather Service, U.S. Fish and Wildlife Service, U.S. Geological Survey and N.D. Geological Survey.

Our Next Steps

The 2017 flood demonstrated how mitigation measures can minimize the impacts of disasters. Our goal is to build upon the successes of our efforts by assisting communities to develop plans and projects designed to build disaster-resilient communities.

Two avenues of funding recently became available for our eligible communities – the FY2017 Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) Programs, as well as the disaster specific Hazard Mitigation Grant Program (HMGP).

We are working with our local and tribal partners to pursue projects that have proven successful for our communities in the past, and we are always willing to explore new opportunities for mitigation actions, such as wetlands and streambed restoration projects. NDDES has currently placed a funding priority on the development of MHMPs, purchasing and installing critical facility generators, the placement of community storm shelters, and drought mitigation measures.

NDDES will also continue to focus funding into areas of known repetitive loss, such as the Mouse River, Red River, and Devils Lake Basins, where the majority of HMA funding has been utilized in the past to prevent damages caused by these high risk areas. We are also working to track all repetitive loss and severe repetitive loss properties across the state in order to fund additional property acquisition projects that will help reduce the costs of National Flood Insurance Program (NFIP) flood claim payments, and deed restricting these properties in perpetuity to prevent future

flood related damages. In conjunction with our efforts to identify these repetitive loss properties, we will also continue to encourage our local and tribal jurisdictions to develop mitigation actions that would remove these repetitive loss properties as well.

Our own state multi-hazard mitigation plan will be undergoing the official update process this fall, and will require a more in-depth data analysis that takes into account future climate conditions. We will build upon our mitigation strategy that has proven to make North Dakota more resilient, and hope these efforts will position us for an Enhanced Plan status, which will translate into increased Hazard Mitigation Grant Program dollars for the state.

Our agency is currently preparing for an on-site assessment by the Emergency Management Accreditation Program (EMAP). EMAP is an independent non-profit organization that fosters excellence and accountability in Emergency Management and Homeland Security Programs.

EMAP establishes credible standards applied in a rigorous peer review assessment and accreditation process. The standards related to hazard mitigation position us well for our efforts to achieve Enhanced Plan status.

In North Dakota, we consider ourselves fortunate to have a strong partnership with public and private organizations that is resulting in safer communities. Mitigation is the only capability that can break the cycle of disaster damages and repetitive losses.

North Dakota Experiences A Wide Array of Disasters

The ND Department of Emergency Services experiences many types of disasters across the state. Staff members at the N.D. Department of Emergency Services (NDDES) have coordinated state response for wildland fires, hazardous material spills, potable water shortages, missing persons, Amber Alerts, downed/missing aircraft, train derailments, flooding, severe winter storms, tornadoes, power outages, hail, rain and high-wind storms that produced significant property damage and threatened lives.

During 2014, 2015 and 2016, there were 7,329 hazardous materials incidents reported. Hazardous materials incidents and other releases/spills during this timeframe include:

- 5,520 oil spill reports
- 1,212 environmental incident reports
- 597 National Response Center (NRC) flash faxes

2014 Events

Larger events included:

FEMA-DR-4190-ND

Presidential Disaster Declaration granted for severe storms and flooding between June 25 and July 1, 2014.

May 26, 2014 – Watford City Tornado (McKenzie County)

An EF-2 tornado struck a RV trailer camp south of Watford City damaging approximately 15 trailers.

Nine injuries but no fatalities were reported. American Red Cross and Voluntary Organizations Active in Disasters (VOAD) provided response and recovery assistance.

Severe storms in northwestern North Dakota

July 22, 2014 – Williston Chemical Fire (Williams County)

A structure fire and explosion was reported at the Red River Supply Company in Williston. The building contained diesel fuel and multiple types of other chemicals.

Assistance included: Minot Regional Hazmat Team, National Guard Civil Support Team (CST), air monitoring, plume modeling, spot weather forecasts, temporary flight restrictions, ND Department of Health and Region VIII Environmental Protection Agency (EPA) technical assistance

Red River Supply Company Fire

2015 Events

2015 was an active spring fire season. A statewide fire emergency declaration and burn ban was issued in response to extremely dry conditions, local/tribal burn bans and fire restrictions declared throughout the state, Fire Weather Watches, and Red Flag Warnings issued by the NWS, unseasonably warm temperatures, low humidity, and high winds. Following are examples of some of the larger fires:

March 12 – Standing Rock Reservation Fire (733 acres)

March 31 – Oliver County Fire along the river bottoms Oliver County Fire

April 13-14 – Fire South of Bismarck in Burleigh County (1,500 acres)

April 14 – Tobacco Gardens Fire in McKenzie County (4,500 acres)

April 14 – Deering Fire in McHenry County (2,000 acres and 250-300 hay bales)

Standing Rock Reservation Fire

April 14 – Drake Fire in McHenry County (120 acres)

April 15 – Multiple fires along I-29 from Grand Forks to the Canadian border

January 7, 2015 - Blacktail Brine Release (Williams County

ND Department of Health, in conjunction with the US Environmental Protection Agency, monitored the cleanup of the produced water (brine) and oil release reported on January 7, 2015, by Summit Midstream.

An estimated 70,000 barrels of produced water and oil were released as a result of a leak from a four-inch saltwater pipeline operated by Summit Midstream Partners LP approximately 15 miles north of Williston.

The spill contaminated two creeks including one that feeds the Missouri River.

Blacktail Brine Release

March 14, 2015 – Western Area Water Supply Authority (WAWSA) Pipeline Break (Burke and Divide Counties)

A break in a WAWSA pipeline impacted water supplies in several communities and their surrounding areas in northwest ND resulting in boil orders to be implemented in Crosby, Fortuna, Noonan and Columbus.

Boil orders were lifted on March 25 for Fortuna, Columbus and Noonan; Crosby's was lifted on March 26.

May 6, 2015 – Heimdal Train Derailment (Wells County)

A Burlington Northern Santa Fe (BNSF) train hauling crude oil derailed about one miles east of Heimdal, ND resulting in the evacuation of approximately 25 people.

A total of six cars derailed with four of those cars leaking and on fire.

Train derailment, Heimdal, ND

Responding Fire Departments included personnel and equipment from Fessenden, Harvey, Hamburg, Devils Lake, Carrington and Maddock. Regional Hazmat Teams from Devils Lake and Grand Forks responded.

State agencies responding to the scene and to the State Emergency Operations Center included the ND Department of Health (NDDoH), ND Department of Human Services (NDDHS) and the ND Highway Patrol (NDHP). The ND National Guard and State and Local Intelligence Center were also notified.

Federal agencies involved in the response included the National Transportation Safety Board (NTSB), Federal Railroad Administration (FRA), Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), National Oceanic and Atmospheric Administration's National Weather Service (NOAA-NWS) and the Federal Aviation Administration (FAA).

Wenck and Associates and BNSF's environmental division assisted local and state responders with air monitoring activities.

2016 Events

Larger events include:

August 3, 2016, tornado in Rolette and Towner Counties:

A NWS storm damage assessment team assessed damage across portions of southeast Rolette County and west central Towner County resulting from storms on the late afternoon and early evening of August 3, 2016.

There were no injuries and no fatalities

Tornado Damage - Rolette County

from this tornado.

Based on video and photographic evident, plus multiple eyewitness accounts, it is clear that a very large multi-vortex tornado tracked from southeast Rolette County, south of Mylo, into west central Towner County passing north of Bisbee between about 5:30 pm and 6:25 pm CDT with additional downburst wind damage extending eastward across central Towner County.

Storm damage at two farmsteads in Rolette County and at least two farmsteads in Towner County had tree and building damage consistent with an EF-2 rating on the Enhanced Fujita scale with maximum winds to 120 mph. Also in Towner County multiple stretches of wooden power poles had numerous cracks and/or snapped poles.

Dakota Access Pipeline (DAPL) Protest Activities (August 10, 2016 - March 31, 2016)

Protesters began gathering in Morton County just north of the Standing Rock Sioux Indian Reservation in opposition to construction of the Dakota Access Pipeline (DAPL).

Anti-pipeline protests

The prolonged, often combative and violent project spanned 233 days, from August 10, 2016, the date protesters initiated confrontation with law enforcement, until March 31, 2017, when traffic was fully restored on a major arterial highway near the vacated protest camps.

The former Governor, the Honorable Jack Dalrymple issued a state emergency in southwest and south central ND on August 19, 2016. Governor Dalrymple issued an executive order on November 28, 2016, ordering a mandatory evacuation of persons located in areas under the proprietary jurisdiction of the U.S. Army Corps of Engineers. Governor Doug Burgum issued an emergency

Recent Federal Disaster Declarations

Since the last update to the 2014 *State of North Dakota Multi-Hazard Mitigation Plan,* the state has received three presidentially-declared disasters. The first one, for a 2013 early winter storm, occurred as the plan was submitted to the Federal Emergency Management Agency (FEMA). The other two were issued in response to 2014 and 2017 flooding. All declarations made Hazard Mitigation Grant Program (HMGP) dollars available on a statewide basis.

North Dakota Severe Winter Storm (DR-4154)
Incident Period: October 4, 2013 - October 5, 2013. This declaration made Public Assistance (PA) Program available in Adams, Bowman, Grant, Hettinger, Morton, Sioux, and Slope Counties.

North Dakota Severe Storms and Flooding (DR-4190)
Incident Period: June 25, 2014 - July 02, 2014. In response to severe storms and flooding, the President made PA available for: Benson, Bottineau, Divide, Eddy, McHenry, Mountrail, Pierce, Renville, and Ward Counties and the Standing Rock Sioux Indian Reservation.

North Dakota Flooding (DR-4323)
Incident Period: March 23, 2017 - April 29, 2017. The Presidential declaration for spring flooding made PA available for: the Turtle Mountain Band of Chippewa Reservation and the counties of Benson, Bottineau, Cavalier, McHenry, Pembina, Pierce, Renville, Rolette, Towner and Walsh.

Flooding

Flooding is North Dakota's most costly and repetitive natural hazard. All 53 counties and four tribal nations have experienced severe damages and losses to public and private properties due to floods.

Flooding on I-94 east of Oriska, ND - 2009

Flooding in Pembina, ND - 2009

Devils Lake Phenomenon: More Than Two Decades of Flooding

When it comes to Devils Lake, the state's largest natural lake, the only certainty is uncertainty.

As Jeff Frith, Basin Manager for the Devils Lake Basin Joint Water Resource Board, said, "There is no consistency; just vast fluctuations in lake levels. There is no relief in sight."

Throughout its history, Devils Lake has experienced protracted periods with extremely dry or extraordinarily wet conditions – multi-decadal wet cycles. In 1940, the lake was nearly dry at an elevation of 1401 feet and studies have shown that the lake has risen to 1458 feet and overflowed to the Sheyenne River multiple times in the past 4000 years. The most recent wet period has been a chronic state for more than two decades, and one with disastrous results.

The closed-basin lake began its historic ascent in 1993, rising over 30 feet to its recent period of record high of 1454.3 feet on June 27, 2011, at which point it covered over 208,000 acres (or 325 square miles). Over the years, Devils Lake has expanded well beyond Spirit Lake Nation and Benson and Ramsey Counties, pushing north into Towner County and east into Nelson County. Devils Lake began to trickle through the Jerusalem Channel into neighboring Stump Lake in Nelson County in May 1999 with substantial flows by August; the elevation of the combined lake system was equalized by September 2007. Currently, the combined lake system covers approximately 165,000 acres. If the lake were to continue its rise to its spill elevation of 1458 feet via Tolna Coulee, nearly 100,000 more acres would be inundated.

Vehicles navigate hazardous road conditions as Devils Lake floodwaters push debris on the roadway.

The unprecedented flooding has been catastrophic to residents, farmers and basin communities. It has posed a myriad of challenges requiring an investment of up to $1.58 billion in federal, state, local and private resources to mitigate flood impacts on nearby communities, residents and critical infrastructure. *Note: Refer to "Devils Lake: An Investment in Mitigation."*

A continued rise will compound existing flood-related problems for Devils Lake Basin communities. Conversely, when lake levels recede, Kristen Nelsen, Ramsey County Emergency Manager, anticipates a strangely altered landscape with new hazards and threats as inundated structures emerge from floodwaters.

"We are going to have problems if the water goes up, and we are going to have bigger problems if the water goes down," Ms. Nelsen said.

As Devils Lake Basin entered its 24th year of flooding this spring, a heavy snowfall contributed to a continued rise in the lake. By July, Devils Lake at Creel Bay measured approximately 1,451.2 feet, 3.1 feet below the record level.

Both Mr. Frith and Ms. Nelsen anticipate continued flooding in the basin will compound a cascading series of impacts, including loss of prime agricultural land; problems caused by rising groundwater levels; loss of access; extended emergency response times; and increased stress due to loss of personal income. Mr. Frith cautioned that a number of variables will impact levels, to include remaining snow cover, frost depths, spring temperatures, pace of runoff and spring rains.

However, the investment in mitigation is paying dividends by reducing the level of impacts. “We can maintain commerce and daily living because of the mitigation efforts,” Mr. Frith said. “Even if we are expecting a three- to four-foot rise in the lake, the damages, other than to agricultural land, are going to be very minor. We have gotten pretty good at [addressing] flooding. Some lessons learned were harder than others, but eventually we got most of them right. For the most part, people are prepared. They saw what 2011 brought and they know what to expect this year.”

While focused on immediate flooding concerns, Mr. Frith and Ms. Nelsen are also concerned about the future when the lake levels begin to recede. As Mr. Frith explained, “It is not a matter of if we go dry, it is when we go dry. What is the landscape going to look like when the lake level goes down?”

In recent years, although floodwaters have receded a few feet, safety concerns have surfaced. Thousands of trees and more than 700 structures are currently inundated and obscured, contributing to boating accidents including a recent incident that left one person dead, another in a coma and a third with permanent injuries. A total of 24 deaths due to submersion have occurred since 1993.

Mr. Frith believes roads acting as dams -- roads that were continually elevated in response to rising water levels – could present a hazard for motorists. These roads are without guardrails, which Mr. Frith believes are essential to protect motorists against potential precipitous drops into the lake. However, highway officials note guardrails could pose another hazard by collecting snow during the winter and increasing hazardous driving conditions. It’s a challenge that’s not easily resolved.

When levels recede, a robust tourism industry, centered on a lake famous for walleye fishing, could experience a sharp decline. There is also the unresolved question of who has responsibility for abandoned property and removal of debris, the resolution of which will stretch financial resources of residents and their governments.

The issues promise to remain just as complex. As Mr. Frith pointed out, “We need to come up with a lake level elevation that is workable for everyone.” It likely will prompt a re-examination of tax valuation of lands and zoning ordinances. It will require balancing the need to keep residents safe with waterfront development and other economic development efforts. “If we could stabilize

Devils Lake “itself is not shocking. In fact, to eyes like mine, seeing it for the first time, it looks unremarkable, benign even—flat, blue, shallow around the edges. What's unnerving are the signs that the land beneath was dry not long ago. Every few miles along the highway, a cross-street leads straight into the blue, the yellow center lines almost beckoning drivers to follow and submerge. In the town of Minnewaukan, just past D Avenue, Main Street itself disappears into the water.”

Lisa Hamilton, “Where the Roads End in Water: The Lake That Won't Stop Rising,” The Atlantic, May 13, 2011

Devils Lake, it could be a two to four billion [dollar] economic boost to the state commercially and economically, with just the tourism dollars and real estate development," Mr. Frith said. "People in this day and age work very hard and they need that recreational time… enjoying whatever the lake has to offer. When it goes dry, you take away that availability. When it is too high, you have limited access." As it stands, only one of the three public beaches are available; the remainder are at private resorts.

No matter the current direction of the lake level, one thing is certain: Devils Lake continues to require the collaboration of multiple local, tribal, state, federal and private partners to initiate and implement mitigation projects. Mr. Frith said, "It has to be a team effort from top to bottom."

Devils Lake: An Investment in Mitigation

Rising lake waters have regularly impacted roadways

For mitigation to be effective, it takes a collaborative approach by public and private partners. The historic rise of Devils Lake has presented one of the most challenging, and rewarding, efforts to mitigate the impacts of a natural hazard.

Since 1993, when the lake started rising from an elevation of 1423 feet, federal and state agencies, cities, townships, counties and private entities surrounding Devils Lake, have invested over $1.58 billion to mitigate the effects of floodwaters, which have risen as high as 1,454.3 feet, which occurred in 2011. Today, the lake measures around 1,450.2 feet, but forecasts call for a potential rise this spring of three to four feet.

Through the years, private and public resources have been leveraged to construct dams; elevate roads; build levees, including the 1466-foot, 12-mile-long embankment protecting the western, southern and eastern edges of the City of Devils Lake; acquire homes; provide relief for agricultural producers; store water on agricultural lands; develop and operate two outlets; model potential impacts created by increased lake levels; provide area-specific forecasts; and provide assistance to farmers and local businesses.

The 2017 *Ramsey County Hazard Mitigation Plan* and the State Water Commission webpage, http://www.swc.nd.gov, enumerate several of these initiatives as follows:

Devils Lake Embankment System – The U.S. Army Corps of Engineers constructed the initial embankments to an elevation of 1445 feet to protect the City of Devils Lake in the 1980s. Since 1996, the Corps has raised and extended the embankments three times due to rising lake levels, at a total cost of $53 million. In 1996, embankments were raised to 1450 feet, again in 1997 to 1457 feet, and again in 2004 - 2005 with a top of embankment elevation of 1466 feet.

Acquisitions -- Since 1994, 129 structures around the expanding Devils Lake/Stump Lake system that carried flood insurance have qualified for demolition, salvage, or relocation through the waiver of flood insurance rules. All of the acquisitions include deed restrictions. Within cities, a restricted covenant is placed on the property's title whereas, in rural areas, an easement is generally used for the restriction on each property. These provisions keep new development from occurring on acquired lots.

Roads Acting as Dams (RAADs) – The N.D. Department of Transportation, in collaboration with the Federal Highway Administration (FHWA), the N.D. National Guard, Spirit Lake Nation, the U.S. Army Corps of Engineers (USACE) and the State Water Commission (SWC), has provided or is in the process of providing over $350 million for projects in the Devils Lake area. Current grade raise projects are focused on getting essential roadways to an elevation of 1460 feet. A number of bridges were previously constructed to an elevation of 1465 feet. From 1995 to the present, Emergency Relief Program funding has been and is being used to raise roads and bridges on multiple occasions. Some limited funding has come from such sources as the

National Highway System Program and Surface Transportation Program of the Federal-aid Highway Program.

Assistance to Individuals – The Federal Emergency Management Agency (FEMA) has provided $46 million through its Individuals and Households Grant Program, the National Flood Insurance Program (NFIP), risk assessments and 17 other grants.

Public Assistance – The state-managed Public Assistance Program, funded through and administered in partnership with FEMA, has provided $31 million in funding for repair or replacement of public infrastructure facilities, county and township roads, public buildings, and utilities. Projects include road grade raises, sewer and water repair, bridge and culvert repair and protection, and debris removal projects.

Tribal Roads -- The Central Federal Lands Highway Division (CFLHD) and the Bureau of Indian Affairs (BIA) started raising BIA Routes 1, 2, 4, and 5, initially to an elevation of 1442 feet and eventually to an elevation of 1460 feet. In 1999, the BIA contracted with the Bureau of Reclamation to perform dam safety hazard classifications on the roads that had been raised. These studies classified the roads that were acting as dams as having a significant hazard potential since they were not designed as dams. Emergency action plans have been written for the RAADs on the Spirit Lake Indian Reservation.

Devils Lake Outlets -- In 2002, the State of North Dakota began construction of a 100 cubic feet per second (cfs) outlet from the West Bay of Devils Lake to the Sheyenne River. The outlet became operational in 2005 and in 2010, the capacity was increased to 250 cfs. In 2012, in response to continued rising water levels, an additional 350 cfs outlet was constructed at East Devils Lake. The combined discharge capacity of both outlets is 600 cfs and the outlets are operated according to limitations on the downstream water quality and quantity in the Sheyenne River. In the 2017 operating season, it is likely that the outlets will surpass 1 million acre-feet of cumulative discharge since beginning operations.

Tolna Coulee Control Structure – As floodwaters rose in the Devils Lake Basin, the threat of a catastrophic uncontrolled overflow from Stump Lake became a major concern. As a result, the state partnered with the USACE on a control structure at Tolna Coulee as an added level of protection from a natural uncontrolled overflow. The control structure was constructed by the Corps and is now owned and operated by the State of North Dakota.

Upper Basin Water Management -- There have been numerous efforts at upper basin water management in the Devils Lake Basin, including storage and land management programs. Various efforts to store water and reduce runoff in the upper basin continue - mostly through a variety of conservation programs.

Support to Agricultural Producers -- The N.D. Department of Agriculture, through the Natural Resources Conservation Service (NRCS) and the Farm Service Agency (FSA), has provided over $100 million to the Devils Lake area since 1992. Assistance to agricultural interests came from FSA in the form of crop loss assistance programs when lands were incapable of production due to flooding issues. NRCS has implemented water conservation and quality practices as well as wetland protection, restoration, and improvement programs that have resulted in reduced flooding on agricultural lands and improved water quality.

Enhanced Hydrologic Prediction -- NOAA's National Weather Service (NWS) has developed enhanced hydrologic prediction capabilities that are being used to forecast flooding at Devils Lake. Plans are to use these capabilities to develop future scenarios for the area. It is through NOAA and the NWS in partnership with U.S. Geological Survey (USGS) and other federal and state agencies that much of the science behind current and future projected conditions have

been developed.

Restoration of Wetlands and Grasslands -- The U.S. Fish and Wildlife Service (USFWS) has supported the Devils Lake area since the early 1990s through upper basin management, infrastructure protection, and active private lands programs. The USFWS has helped to restore wetlands and grasslands in the Devils Lake Basin, often on private lands, resulting in improved upper basin management and overall environmental health and water quality. The USFWS has also conducted several analyses regarding fish pathogens and other biota issues for Devils Lake.

Community Development -- The U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) Programs have spent $3,000,000 in the Devils Lake basin since 1995.

Data courtesy of Kristen Nelsen, Ramsey County Emergency Manager, and State Water Commission website, http://www.swc.nd.gov/project_development/dl_flood_mitigation.html

Devils Lake Embankment Project Nearing Completion

This U.S. Army Corps of Engineers photo shows a portion of the Devils Lake embankment system.

The U.S. Army Corps of Engineers (the Corps) has been collaborating with local, tribal, state and federal partners to ensure the City of Devils Lake is protected against rising flood waters. Through the years, the USACE has adapted to lake rises by increasing the height and the length of its embankment.

In March 2017, Bonnie Greenleaf, Corps Project Manager, reported that to continue to meet the appropriate combination of levee and dam safety standards, it was necessary to raise the existing embankments protecting the City of Devils Lake, North Dakota and extend the embankments to high ground. Previously, the embankments had been constructed to an elevation of 1,460 feet. The height required for the maximum pool elevation of 1,458 feet (where flows would begin out the natural outlet at Tolna Coulee) is 1,466 feet to meet dam safety standards, with areas of higher wave run-up being slightly higher. The embankment length has now been increased from approximately eight miles to more than 12 miles.

The embankments have been raised to protect the City of Devils Lake in four phases, all of which are substantially complete.

The project included five new pump stations constructed by the Corps and the North Dakota National Guard. These pump stations will pump the stormwater from the interior side over the embankments. They range in capacity from 5,000 gallons per minute to 312,000 gallons per minute.

Remaining work includes turf establishment and final project documentation. This work is expected to be complete in the fall of 2017.

Through 2016, $185.6 million in damages have been prevented by the project. The city is now protected to the maximum pool elevation. No additional embankment raises will be required. The City of Devils Lake will operate and maintain the project once all the construction and project documentation is complete.

This project is authorized under the Flood Control and Coastal Emergencies Act. Funding for construction was included in the 2009 Emergency Supplemental Appropriations Act (Public Law 111 -32) and approved in the project information report dated September 2009.

The construction project is currently estimated at approximately $179.8 million. The construction is cost-shared 75-25 between the federal government and the city of Devils Lake.

Mouse River Flood Mitigation Addresses Needs of Residents

Mouse River flooding - 2011

The catastrophic flood of 2011 broke 21 record levels at river gauges across the state and forced the evacuation of 12,000 Ward County and Minot area residents.

Even with its far reaching impacts, the 2011 flood could not rival the resiliency of North Dakota residents who are building back better and smarter.

In the hardest hit area of all, the Mouse River Basin, the Souris River Joint Board has been instrumental in looking at opportunities to mitigate the impacts of flooding. The Mouse River Enhanced Flood Protection Project (MREFPP) is looking at the basin holistically to identify and implement projects to make communities safer. Ackerman-Estvold, a Minot engineering and architecture consulting firm, is assisting the Souris River Joint Board with development and implementation of the plan.

As stated in planning documents, the U.S. Army Corps of Engineers estimates 4,700 residential, commercial, and public structures in Renville, Ward and McHenry Counties sustained building and contents damages totaling more than $690 million. If emergency flood fighting measures had not been implemented, structure damages would have totaled roughly $900 million. Infrastructure damages totaled hundreds of millions of dollars in the city of Minot alone.

The MREFPP is designed to reduce flood risk to Mouse River valley residents – both urban and rural. The project was originally initiated by the North Dakota State Water Commission (NDSWC) in response to a request for assistance from the Souris River Joint Board (SRJB) following the record-breaking Mouse River flood of June 2011.

The first phase of the MREFPP included the development of a plan to reduce flood risk in the river valley from Burlington to Velva, and Mouse River Park. The Preliminary Engineering Report (PER) describes in detail proposed improvements along the Mouse River to reduce flood risk in areas that are primarily developed or urban in nature.

In the latter stages of the development of the PER, the focus began to shift to the rural areas of the Mouse River Valley. Basin-wide evaluations of erosion, sedimentation, hydraulics and hydrology were completed to begin to assess the basin-wide implication of improvements proposed in the valley. Additionally, an evaluation of 12 different alternatives for reducing flood risk for the rural reaches of the basin was completed.

The focus of the MREFPP now shifts toward implementation. The SRJB has developed a long-range capital improvements program (through 2039) focused on rural and urban improvements throughout the Mouse River valley. The total estimated cost of this program, in 2017 dollars, is approximately $1 billion.

Three phases of the project through Minot have been advanced, designed and are currently in the permitting stage with construction beginning in 2017. Two sub-phases of these projects started construction in 2016.

Projects currently in development include the:

Minot water treatment plant project

- Minot Water Treatment Plant Flood Protection Project, funded through Hazard Mitigation Grant Program, City of Minot and State of North Dakota funding.

- Phase MI-1 4th Avenue Project. The floodwall phase of the project is located between just west of Broadway and just east of Third Street NE, which features floodwalls, earthen levees and a pump station.

- Phase MI-2 Napa Valley Project, which begins at the west edge of Minot at the Highway 83 Bypass and ends at 16th Street Southwest across the Mouse River from the Minot Water Treatment Plant, on the north side of the Mouse River. The features through this segment of the project are predominantly earthen levees with an average height of approximately 14 feet.

Perkett Ditch

- Phase MI-2A Perkett Ditch, which addresses interior drainage issues. The project includes ditch enhancements and a ponding area near Centennial Forest.

- Phase MI-2B Souris Valley Golf Course Temporary Greens and Tees, a project to create temporary greens and tees on three holes of the golf course for continued playability. As part of the Napa Valley project, three holes will be reconfigured and reconstructed.

- Phase MI-3 Forest Road. This portion of the urban flood control project begins at the east end of the Napa Valley segment, at 16th Street Southwest, and ends at the end of 3rd Avenue Southwest.

- Phase MI-5 Rodeo Road Levee. This portion of the urban flood control project begins at the eastern end of Phase MI-1, crosses the BNSF Railroad tracks, and continues east towards the North Dakota State Fairgrounds. The features are predominantly earthen levees with a large closure structure to be constructed across the BNSF Railroad tracks.

- Phase BU-1 City of Burlington, a flood risk management system that will encompass a significant portion of the City of Burlington.

- StARR (Structure Acquisition, Relocation and Ring Dike) Program, which was developed by the Souris River Joint Board as a potential solution to address continuous flooding challenges for private landowners throughout the rural areas of the Mouse River Basin.

Information courtesy of Ackerman-Estvold of Minot. The following website discusses the Mouse River Enhanced Flood Protection Project: https://www.mouseriverplan.com/.

StARR Program Focuses on Rural Residents

The StARR Program for rural property owners was recently implemented and residents are currently in the process of working with the SRJB regarding flood protection features for each impacted property.

One of the projects includes the StARR (Structure Acquisition, Relocation and Ring Dike) Program was developed by the Souris River Joint Board as a potential solution to address continuous flooding challenges for private landowners throughout the rural areas of the Mouse River Basin. The program contains options for landowners to receive assistance through funding from the ND State Water Commission, City of Minot Sales Tax collections directed at flood protection, and a local share of 5%, for the purpose of structure acquisition and demolition, structure relocation, or the ring diking of property. The North Dakota State Water Commission and US Army Corps of Engineers Silver Jackets Programs are also project partners. The program currently has $12 million available.

House moving in rural Ward County

There were approximately 250 properties initially identified as potential participants. Informational meetings introducing the program concept were held for those residents and input related to the draft program policies was collected, analyzed and incorporated into the program. The program requirements were adopted by the Souris River Joint Board in January of 2016 and the ND State Water Commission approved the cost-share participation in March of 2016.

Following the informational meetings, about 115 property owners indicated their continued interest in one of the program options and signed off on allowing the Corp's/Silver Jackets to survey the property collecting elevation, photographs and structure valuation information. Individual meetings with property owners were held to determine interest and the best solutions for each situation. There are currently about 60 property owners interested in one or more elements of the StARR program. These 60 property owners are at various stages in the process including appraisals, offers, acquisitions, demolitions, relocations and ring dike design and construction.

Comprehensive Study of the Red River Underway

When the river that runs north floods, the impacts are widespread. Consider these facts about the Red River of the North:

- The river covers 45,000 square miles in two nations with 80 percent in the United States and 20 percent in Manitoba, Canada.
- The river flows through 22 North Dakota and 18 Minnesota counties.
- A large portion of North Dakota's population lives in the basin that serves as a jobs, education and medical hub in addition to a world-renowned agricultural production.
- Flooding has created significant issues for loss of native habitat and economic impacts from urban-generated activity and agriculture.

The Red River encroaches on roadways during the 2011 flood.

The U.S. Army Corps of Engineers (Corps) and the Red River Basin Commission (RRBC) are collaborating to manage watershed issues for the Red River of the North, better positioning the region to address flood and drought events. In North Dakota, RRBC members include representatives of impacted counties, cities, water resource districts, the N.D. Department of Health, the N.D. State Water Commission, N.D. Game and Fish Department and the N.D. Agriculture Commissioner.

The collaboration will allow the RRBC to update its Natural Resources Framework Plan (NRFP) in concert with the USACE effort to develop a Red River Comprehensive Watershed Management Plan.

The Minnesota Red River Watershed Management Board and the North Dakota Red River Joint Water Resource District are the study sponsors.

The CWMP effort began in June 2013 and will continue through 2017. The RRBC natural resources framework plan is a guide for a basin-wide approach to integrated resource management using multi-jurisdictional decision making and cooperation. The comprehensive watershed management plan will build upon the RRBC's natural resources framework plan and will address basin-wide goals and objectives for:

1) Flood risk management and hydrology;
2) Aquatic and riparian ecosystem health;
3) Water quality;
4) Water supply;
5) Recreation, and
6) Soil conservation/soil health.

The plan will recommend strategies, plans, and further study of activities or projects that address watershed problems and achieve watershed objectives, as well as identify the entity best suited for accomplishing such activities.

Desired outcomes for the RRBC include an updated vision for the basin that all can agree to and do their best to help implement. The plan will be used both as a local planning document, and as a vehicle for further federal support of local projects.

Silver Jackets Program Initiates Nearly 20 Projects

The Silver Jackets Program has made significant progress to help mitigate flooding in North Dakota by partnering with federal, state, tribal and local partners on nearly 20 projects.

Silver Jackets teams are collaborative state-led interagency teams, continuously working together to reduce flood risk at the state level. Through the Silver Jackets program, the U.S. Army Corps of Engineers (Corps) and the Federal Emergency Management Agency (FEMA) are working with other federal, state, local and tribal agencies to provide a unified approach to addressing a state's priorities.

Since retired N.D. National Guard Colonel Michael Hall became Silver Jackets Coordinator for the N.D. State Water Commission (NDSWC) in January 2010, the group has been instrumental with several studies, projects and initiatives designed to minimize the impacts of flooding in our state's river basins.

The Silver Jackets members discussed projects during the 2016 meeting.

Following is a summary of those accomplishments:

- **James River Feasibility Study** -- Completed in September 2014, the study provided necessary flood risk reduction information to the James River Joint Board (JRJB) for the state's portion of the James River Basin. The study encompassed detailed hydrology and hydraulics (H&H) information to include new hydrology, bathymetry, hydraulic modeling, bridge and culvert inventories, and Corps-updated 100-year floodplain maps. The study also led to updated hydrology and FEMA floodplain maps for the Upper James River Basin above Jamestown to include Stutsman, Wells, Foster and Eddy Counties. This study also incorporated recently flown Light Detection and Ranging (LiDAR) for the entire basin and and was funded by the Corps, NDSWC and JRJB, with additional funding from FEMA for the updated Flood Insurance Rate Maps for the upper James River Basin. The LiDAR was funded by a coalition of federal and state agencies of the ND Silver Jackets Team to include U.S. Fish and Wildlife Service (USFWS), FEMA, the Corps, NDSWC, Natural Resource and Conservation Service (NRCS) and the U.S. Geological Survey (USGS).

- **LaMoure Corps Section 205 Project** – The City of LaMoure worked with the Corps on potential permanent flood risk reduction measures by leveraging new data originating from the James River Feasibility Study. Work was completed to identify potential projects that meets the Corps' federal cost benefit requirements and or could be turned over to the local sponsor for construction with state and local funding. The status of this project is currently pending a decision by the county and the city leaders on whether to proceed.
- **Valley City Flood Protection Project** – This project began with completion of Corps' Sheyenne Feasibility Study in January 2013 to update H&H from the Bald Hill Dam Reservoir through Valley City, and to identify necessary flood protection. Since then, city officials been working with the NDSWC to obtain funding for property acquisitions and permanent flood protection for a project spanning several years. This is a multi-phase flood protection project; currently, Valley City leaders are pursuing property acquisitions to support Phase 4.
- **Lisbon Flood Protection Project** – This project was initiated after completion of a NDSWC-funded Sheyenne River Study in 2010 and is designed to determine the level of protection necessary for permanent flood protection. The project included home acquisitions, leveraging funding from FEMA's Hazard Mitigation Grant Program (HMGP) and the NDSWC. Property acquisition and permanent flood protection continues as a multi-year project and funded by the NDSWC and local funding.
- **Souris River Basin Hydro-meteorological Study** – This Silver Jacket study, funded through Corps at request of the Souris River Joint Water Board (SRJB), was completed in 2014. The study, designed support flood risk reduction measures, examined gaps in measuring/accounting for precipitation and impacts on flood forecasting, and Mouse River flows in Canada and the United States. The study included federal and state agencies, USGS, NWS, USFWS, Corps, NDGS, NDSWC and Canadian water authorities along with other local stakeholders. The SRJB oversees activities related to the Mouse (Souris) River in North Dakota. The board is made up of one representative each from water boards in Renville, Ward, McHenry and Bottineau Counties and the City of Minot.
- **Souris River Basin System Wide Improvement Frameworks (SWIF) Project** – This project focuses on assisting the SRJB develop its Corps-required SWIF in support of a permanent federal levee protection for the Burlington, Minot and Velva areas. The Corps briefed local officials on safety concerns for the levees, the status of the Corps' current risk assessment for the levees, and the rationale for developing a SWIF plan to address those safety and risk concerns. The project

It is All in the Name

In North Dakota, we call it the Mouse River.

But others, including our federal partners such as the U.S. Army Corps of Engineers, call it the Souris River.

However, according to a state law approved in 1961, the river actually should be called the Mouse River, the English translation of the river's French name, Souris. As stated in *North Dakota Century Code 61-01-24*:

That body of water which enters the state in or adjacent to that township described as township one hundred sixty-four, north, range eighty-seven, west, in the county of Renville, and proceeds in a generally southerly course through the city of Minot, thence in a generally easterly and northerly course through the cities of Velva and Towner to a point in or adjacent to that township described as township one hundred sixty-four, north, range seventy-nine, west, in the county of Bottineau, at which point it leaves the state of North Dakota, shall be known as the Mouse River. Nothing herein shall be considered as invalidating any national or international agreements designating the river as the Souris.

coincides with a state and local permanent levee project to enhance and replace the Corps levee project currently in place. The project, conducted in the spring through fall of 2014, resulted in the submission for the SRJB's SWIF to the St. Paul Corps in January of 2016 for approval and development of a Corps-required Flood Emergency Action Plan (EAP) to support the SWIF.

- **Souris River Joint Board EAP Workshops** – The SRJB and City of Minot requested the Corps to conduct EAP daylong workshops for both the City of Minot and the counties and cities comprising the SRJB. These workshops, held during the spring of 2015, focused on the development of a flood EAP for city and local officials responsible for flood fighting.
- **Red River Basin Flood Forecasting Improvement Project** – This Silver Jackets project, approved during the summer of 2014, is designed to identify gaps and shortfalls in necessary data. The project consists of specifically identifying the soil moisture content and temperature through the Red River Basin. The project was completed November 2016 and is assisting with better flood forecasting within the Red River Basin. Partners include the Corps, NWS, USGS, North Dakota, Minnesota and local organizations.
- **Emmons County / Linton Flood Risk Reduction Measure Study** – This Corps Section 22 Study is being conducted for City of Linton with support from the NDSWC for H&H for the Beaver Creek Basin. Meetings have been held with local officials to review the status of the new H&H and to discuss potential mitigation measures. This project is currently ongoing with EAP workshops scheduled for October 2017.
- **Emmons County / Linton Non-Structural Workshop –** This workshop was conducted in Linton in February 2016, in conjunction with the Corps Section 22 Study to look at Non- Structural Flood Protection Measures ILO Permanent Flood Protection. The workshop focused on Corps' alternative measures such as raising properties and structures above the floodplain, wet and dry flood proofing, property acquisitions, flood emergency action planning, temporary emergency levees, the National Flood Insurance Program (NFIP) and the NFIP Community Rating System.
- **Mercer County / Beulah Flood Risk Reduction Measure Study** – With support from the NDSWC, this Corps Section 22 Study is being conducted for Mercer County and City of Beulah to examine H&H for the Knife River and selected tributaries. The Study included a meeting with city and local officials to review status of the new H&H and to identify potential mitigation measures. This project is currently ongoing with EAP workshops scheduled for October 2017.
- **Mercer County / Beulah Non-Structural Workshop** – This Silver Jackets Project was conducted in Beulah, in conjunction with the Corps Section 22 Study in February 2016, to look at Non- Structural Flood Protection Measures ILO Permanent Flood Protection.
- **Souris River Joint Board / City of Minot Non Structural Workshops** – The Silver Jackets Program conducted this workshop for the City of Minot and SRJB counties in April 2015 to look at Non- Structural Flood Protection Measures in support of the state and local Mouse River Enhanced Flood Protection Project.
- **Red River Basin Emergency Action Plan (EAP) Workshops** – The Silver Jackets Program has been instrumental in setting up meetings with the Red River Joint Board for public officials to evaluate whether to enhance flood emergency action planning and awareness. Workshops were executed throughout the Red River Basin from Pembina to Wahpeton, ND, in the fall of 2016 for
- **Unsteady Flow HEC-RAS Model for US and Canada Stretches of Souris/Mouse River** — This Sliver Jackets project, approved in January 2015 and currently ongoing, is intended to enhance and refine both existing US and Canadian Hydrologic Engineering Center (HEC)--River Analysis System (HEC-RAS) Models with the best current data. The goal is to have one comprehensive continuous unsteady flow model from Rafferty Dam in Saskatchewan, through Sherwood to Westhope, North Dakota. This project will both support the International Joint Commission's Plan of Study for the Souris/Mouse River, sponsored by the US and Canadian authorities along with the SRJB, and the Mouse River Enhanced Flood Protection Project.

- **NGVD ‘29 to NAVD ’88 Change for the Mouse River Basin –** This project was initiated during the fall of 2015, at the request of the SRJB to change the Vertical Elevation Datums used for the National Weather Service (NWS) Advanced Hydrologic Prediction Sites (AHPS) (River Gauge Sites for NWS flood forecasting) from NGVD ’29 to NAVD ’88. The USGS and NWS were integral to the implementation and approval of this project along with support from the Corps and NWS. USGS gage sites and the NWS AHPS websites have subsequently been revised. The change was also addressed and discussed at the International Souris River Board meeting during its April 2016 meeting in Bismarck for awareness and impact on the Souris River Operating Plan. Both the USFWS and NWS were instrumental in providing public awareness and outreach. This project was identified during a Silver Jackets Emergency Action Planning Workshops.
- **Souris River Basin Inundation Mapping Project –** The SRJB once again leveraged the Silver Jackets Program to provide interactive inundation mapping tied to the NWS’s AHPS sites for the Souris River Basin. This project, initiated during January 2016, was identified during the Emergency Action Planning Workshops conducted for the SRJB, with Phase 1 of the project currently ongoing.
- **Souris River Basin Non-Structural Mitigation Study –** The intent of this project, approved in January 2015, was to identify and inventory rural properties within the Souris River Basin floodplain, from Sherwood to Westhope, with GIS location and elevation, photographs and estimated value for the StARR Plan (Structure Acquisition, Relocation or Ring Dike Plan). The SRJB is working with individual rural property owners on possible mitigation solutions. The StARR project received approval from the NDSWC Cost Share Funding and is currently being implemented throughout the Souris River Basin.
- **ND LiDAR Collection Project—** Since the flood of 2009 and initiation of the Silver Jackets Program in January 2010, selected Silver Jacket participants (NDSWC, USGS, USF&WS, FEMA, Corps, and NRCS) have been participating in an ongoing effort to collect LiDAR for the entire state of North Dakota. Previously, the only LiDAR collected was for the Red River and Devils Lake Basin. The effort began in 2010 with collection of the James River Basin (used for the James River Feasibility Study) and has continued westward ever since. Today the project has collected 100 percent of the state; recently all the LiDAR data has been posted on the State Water Commission website for the public and all state and federal agencies.

The Silver Jackets Program is exploring the possibility of more projects to include:

- Update of HMR 52 – Probable Maximum Precipitation analysis for the state of North Dakota.
- A comprehensive Reservoir Model (Prescriptive or Descriptive) for the Souris River in support of the International Joint Commission’s (US and Canada) Plan of Study and in support of Flood Risk Management for the Souris River Basin.
- Emergency Action Plan Workshops for Mercer and Emmons County
- Corps Sec 22 Ground Water Analysis for the City of Napoleon, Logan County.
- Emergency Action Plan workshops for Stutsman and LaMoure Counties.
- Phase 2 of the Souris River Basin Inundation Mapping Project.
- Red River Basin USGS/NWS gage conversion from NAVD 1929 to 1988.

Missouri River Decadal Drought Risk Assessment Underway

The photos above compare the same pasture in Grant County from 2016 (the first photo) to 2017. Photos are courtesy of the NDSU Extension Service.

It's been long said that climatic conditions seem to range from one extreme to the other in North Dakota. After years of flooding, North Dakota is now in the midst of extreme drought conditions that are currently adversely and significantly impacting the state's agribusiness and livestock production.

As stated in the 2014 *State of North Dakota Multi-Hazard Mitigation Plan,* our state previously suffered drought conditions in the 1930s, 1950s, early 1960s, mid 1970s, early 1980s, 1988 through 1991, 2002 through 2004 and 2006.

Research is underway to better understand the cycle of droughts including one study that North Dakota state agencies are supporting: the Decadal Drought Risk Assessment and Scenario Development for Food and Bio-fuels Agriculture in Four Missouri River Sub-basins. It's a project funded by the National Oceanic and Atmospheric Administration-Climate Program Office-Sectoral Applications Research Program.

Researchers from the National Drought Mitigation Center and the Center for Research on the Changing Earth Systems are assessing decadal drought information needs of food and bio-fuels agriculture, and developing decadal drought and impacts scenarios in the Marias (Montana), James (North and South Dakota), Central Platte (Nebraska), and Lower Grand (Missouri and Iowa) sub-basins within the Missouri River Basin (MRB).

Previous research has shown that natural decadal climate variability (DCV) phenomena substantially impact water and crop yields in the MRB, and that multiyear to decadal dry and wet epochs caused by DCV phenomena substantially impact the agriculture sector. In prior research, researchers have also assessed MRB-wide need for decadal drought information and found that impacts of DCV phenomena on agriculture are distinctly crop- and region-dependent; highlights of research, and published papers and reports from previous MRB projects are available from missouri.crces.org.

The scientific objectives of this research project are: (1) to define decadal drought information needs of agricultural stakeholders in four selected sub-basins of the MRB; and (2) to conduct a scenario-planning exercise for coping with multiyear to decadal droughts in the four sub-basins selected for study.

Researchers are using a variety of climate, hydro-meteorological, agricultural, and water data in this research. Outputs from a 12 km x 12 km version of the well-established Soil and Water Analysis Tool (SWAT) as well as data and methodologies from our U.S. Department of Agriculture (USDA)-National Institute of Food and Agriculture (NIFA) funded project focused on the MRB are also being employed in the proposed research.

A Stakeholder Advisory Team (SAT) is constituted in each selected sub-basin and the SAT members are involved from the initial stages of the research (introductory webinar discussions with the SATs are available from missouri.crces.org).

Researchers expect that the assessment, elicitation, and scenario-planning methodologies being developed in this project will be useful to society in maximizing benefits and minimizing adverse impacts of multiyear to decadal dry and wet epochs on the agriculture and water sectors. Results of the research may also be useful in defining the need for investments in DCV observation and prediction systems.

This research is directly relevant to the National Integrated Drought Information System (NIDIS) Drought Early Warning Focus Area of Agriculture in the MRB, and will address the following NIDIS objectives: (1) Characterizing climate-related risk perception among stakeholders faced with making decisions in a variable and changing climate; and (2) Developing drought risk scenarios and how these affect water budgets and accounts. Also, this research is highly

In southern Sheridan County, a producer took this photo that shows the hay we was cutting. The mower is cutting a very thin and short stand of grass. Photo courtesy of Dr. Adnan Akyuz, Climatologist, North Dakota State University (NDSU) Agriculture Experiment Station

This photo illustrates how a drought is impacting a corn field with very poor emergence. Photo courtesy of Dr. Adnan Akyuz, North Dakota State University (NDSU) Agriculture Experiment Station

relevant to NOAA's long-term goal of developing climate adaptation and mitigation strategies as described in NOAA's Next-Generation Strategic Plan.

The proposed research is also consistent with a USDA – NOAA Memorandum of Understanding whose purpose is to provide a framework to meet the weather and climate information needs of tribes, the agricultural and forestry sectors, rural and urban communities, and other stakeholders.

Submitted by Vikram Mehta of the Center for Research on the Changing Earth Systems, and Katherin Mendoza, Cody Knutson, Nicole Wall and Tonya Bernadt of the National Drought Mitigation Center

Drought Stakeholder Advisory Team

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State Fire Marshal's Office Makes Fire Mitigation a Priority

The State Fire Marshal's Office, in keeping with its mission to prevent fires, has enacted several initiatives that place priority on mitigation.

As stated in the 2014 *State of North Dakota Multi-Hazard Mitigation Plan*, a small flame within a structure can get completely out of control and turn into a major fire within seconds. Thick black smoke can fill a structure within minutes. The heat from a fire can be 100 degrees Fahrenheit at floor level and rise to 600 degrees at eye level. In five minutes, a room can get so hot that everything in it ignites at once; this is called flashover.

This kitchen photo shows multiple problems -- no exhaust hood or automatic fire protection system in the hood system; a small fan with a very small cord running across the hot vapor space; materials to close to the fryer; a hot fryer next to a wall; an overloaded circuit; and poorly placed switches.

Ken Sisk, Acting State Fire Marshal, discussed initiatives at a recent G318 Mitigation Workshop, which include:

- Developed a pilot program to test the newly developed fire inspection forms and procedures for public assemblies; bars; daycares; above ground bulk fuel storage tanks and fuel dispensing tanks; and private and public schools.
- Equipped six deputies with safety equipment and personal protective equipment to perform fire investigations.
- Developed new fire department e-mail database to inform all 375 fire departments about fire prevention, statistics, and fire related material.
- Developed a quarterly newsletter that is sent to all fire departments and emergency managers. Submitted material to the North Dakota Firefighter Association's quarterly newsletter for publication.
- Acquired statistics and identified incendiary (arson) fire locations, numbers, and types of fires. North Dakota has a 9.3% incendiary fire rate, while the United States has an incendiary fire rate of only 3.8%.
- Collected statistics in order to provide fire departments with information that they can use for their community's fire prevention and education programs, so they can deter the arson problem or reduce the number of fires in their areas.
- Organized and implemented a data collection instrument with the North Dakota Forest Service for fire departments to submit their fire reports. This process is required by the United States Fire Administration. These reports are called the National Fire Incident Reporting System (NFIRS).
- Formed a relationship with the National Fire Protection Association's (NFPA) to serve as the liaison between the NFPA and the fire service, so fire departments could obtain individualized fire prevention material easier and quicker.

Future Goals

- Develop and implement new fire investigation forms and procedures for all fire departments to use in a fire investigation.
- Create a fire education and training program for fire departments to teach and distribute materials on FireWise, Sprinkler Initiative, Take Action, National Wild Fire Community Preparedness Day, Learn Not to Burn. Some programs have been delivered with very few resources to support the educational process.
- Enhance the training for fire inspectors and fire investigators throughout the state.
- Develop radio and TV spots to enforce the importance of fire prevention and education of fire.
- Develop and implement monthly and yearly reports for the fire service about state incidents.
- Enhance fire code legislation to support all fire departments in the state.
- Identify the communities with vulnerabilities to fire and the locations where they exist.
- Develop and implement a state fire mitigation plan.
- Track fire code violations identified throughout the state, and develop and implement a plan to reduce these violations.

State Fire Marshal Serves Multiple Mitigation Roles

The North Dakota State Fire Marshal Division is legislated to abate fire hazards and to investigate all fires that occur within the state.

While performing these vital tasks, the division also performs public education and fire service training for the general public and local fire department personnel. In order to track fires and inspections, the division also collects information about fire occurrences via a national data base reporting format.

Following is a snapshot of mitigation actions taken by the State Fire Marshal:

This photo shows an inward swinging door with an incorrect door knob, step down at the door, and a mat that could cause the door from not opening.

Fire Code

The Fire Marshal Division has the responsibility for establishing the state fire code. This process is addressed in NDCC§18-01 and NDAC§10-07-01. The fire code legislated within the state is the International Fire Code for public assemblies, daycares, bars., schools, hospitals and liquid propane gas tanks. The National Fire Protection Association (NFPA) standards address above ground storage and dispensing tanks.

The fire code, adopted when the building code is passed, is completed every three years, according to NDAC§10-07-02-04. During the building code adoption process, the Fire Marshal Division has a seat on the advisory committee, as outlined in NDAC§ 108-01-01-08. This process establishes the building and fire code for any community that does not have home rule. Home rule communities may pass their own ordinances or use the state fire and building codes. All other communities must follow the state requirements.

Fire Inspections

There are 375 fire departments in North Dakota, but less than 10% of the departments choose to conduct fire inspections. Because 90% of the fire services are voluntary agencies, they often do not have time to spend on inspections. The Fire Marshal provides fire inspection services in support of local fire departments and can delegate the responsibility to any fire departments, pursuant to NDCC§18-01-15.

Fire departments may inspect any business, structure, or premises in order to abate any danger to the public. The primary purpose of this effort is to educate the owner, leasee, or occupant about the dangers of fire and how to prevent them from occurring. The fire inspector may need to engineer or consult an engineer to comply with the intent of the fire or building code. If the owner, leasee, or occupant does not wish to cooperate, enforcement is applied.

The State Fire Marshal partners with several associations to meet these goals of education, engineering, and enforcement. These organizations are the North Dakota Fire Prevention Association, North Dakota Fire Chief's Association, North Dakota Firefighter's Association, National Fire Protection Association (NFPA), North Dakota Fire Council, North Dakota Forest Service, International Association of Arson Investigators, and the North Dakota Fire Service.

Fire Education

These partners also assist with educating the public on the dangers of fire and how to prevent them. This process begins in elementary and secondary educational institutions. Students are provided information and materials distributed by the NFPA. The NFPA provides our office and the fire service with programs to use to educate several different age groups, adolescents, middle age, and elderly. These programs consist of FIRE WISE, LEARN not to BURN, Fire Sprinkler Initiative, Take Action, and National Wildfire Community Preparedness Day. These programs provide lesson plans and teaching resources to enhance the successfulness of the message delivery process.

The State Fire Marshal Division is the liaison between the NFPA and the fire service. In fulfilling this mission, the State Fire Marshal Division assists the fire service in developing educational programs and secures materials from the NFPA to support fire department endeavors.

In addition to public education, the State Fire Marshal Division works in conjunction with the NDFA to deliver fire prevention, inspection, and investigation materials and information to the fire service through state fire schools. The NDFA provides approximately two large fire schools per year along with several other programs on search and rescue, hazardous materials, auto extrication, and leadership. The NDFA also provide a broad array of other valuable individualized hands on training programs to regionalized areas in the state. There were approximately 7,000 fire service personnel trained in the State of North Dakota during 2015.

Data Collection

The data collection process is divided into several different components; inspection, investigation, suppression, and education. These components provide data and information about the fire hazards found throughout the communities; the fires caused as a result of the fire hazards; incendiary fires; location these fires are occurring; total dollars lost from a fire; injuries and fatalities caused by the fires; and what educational programs need to be directed to these communities in order to reduce the fire hazards. This information is collected in several ways. Fire departments are required to report fire hazards found in their communities to the State Fire Marshal Division. The departments are also required to report all investigation results to the State Fire Marshal Division.

Additionally, all fire departments are required to report all fires to the State Fire Marshal Division. This process is done on line through the National Fire Incident Reporting System (NFIRS). These reports are then sent to the United States Fire Administration (USFA) data center. The USFA then compiles all of the information from the fire reports and can provide each fire department with detailed reports of what fires occurred and where they occurred within the communities. This information is used to develop and implement a fire mitigation strategy throughout the state.

Mitigation Planning

The mitigation plan uses the data to reveal the areas where fires occurred and the types of fires that occurred. These factors are then examined to provide an educational strategy that attempts to reduce the number of fires. Some of the communities in North Dakota do not have a fire inspection

process. Therefore, no fire hazards have been abated, which leads to an increased number of fires within the communities. Unfortunately, this produces an attitude among citizens that fire losses are acceptable.

In a study performed on two years of fire data (2014 and 2015) for the State of North Dakota, a significant trend of incendiary fires was located. This trend exhibited that North Dakota had three times the number of incendiary fires then the national average. There were 9.3% of the fires in North Dakota that were arson compared to the 3.8% for the rest of the country. This data will be utilized during the upcoming process to update the State of North Dakota multi-hazard mitigation plan.

NWS: Assessing Long-Term Vulnerability to Natural Hazards

The National Weather Service (NWS) has been assisting the N.D. Department of Emergency Services (NDDES) to consider climate conditions that may affect and influence long-term vulnerability to natural hazards for the state of North Dakota. This was done in response to the Federal Emergency Management Agency's (FEMA's) requirement and new emphasis on including the effects of long term climate change on identified hazards in state hazard mitigation plans.

NWS Bismarck began by referencing the National Climate Assessment (NCA) which was last published in 2014. The NCA was created by a team of more than 300 experts and guided by a 60-member Federal Advisory Committee. Findings from the NCA were tailored by NWS Bismarck for the state of North Dakota. The discussion points (included below) went through a thorough review by local and regional climate experts prior to sharing them with the NDDES.

Initial findings were shared with the NDDES mitigation staff in February 2016 at a meeting held at NWS Bismarck. In April 2016, the findings were also shared at a North Dakota program consultation with FEMA and the North Dakota State Water Commission held at NDDES. Subsequent meetings were held in the spring of 2017 with both the Bismarck and Grand Forks Offices of the NWS, the State Climatologist, NDDES mitigation staff and FEMA to support FEMA's development of guidance for assessing future conditions.

The next NCA is due to be published in 2018. Analyses for the State of North Dakota will be updated at that time.

Changes in North Dakota Weather and Climate

- More days with precipitation over a half inch.
- Longer dry spells (consecutive days without precipitation).
- Summer days with maximum temperatures over 95°F will increase as well as summer nights with minimum temperatures over 65°F.
- Increase in winter and spring precipitation.
- Warming winters.
    - North Dakota's annual temperature increase (over the previous 130 years) is the fastest in the contiguous U.S. and driven primarily by warming winters (especially winter nights).

Impacts for North Dakota

- Increases in winter and spring precipitation may heighten chances for spring flooding.
    - Potentially wetter soils to start growing season
- Longer growing season, but continued risk for late spring and early fall freeze.
- More days over 95°F in the summer would add more stress to livestock and increase evaporation, drying soils and degradation of plant life.
    - Increase in demand for energy including air conditioning during summer.
- Less energy demand for heating in winter.
- Potential increase in invasive species including plants, animals, insects, viruses, and fungi.
- Culturally significant animal and plant life has decreased in tribal communities, and this trend will continue.

Mitigation at Work: Leveraging Federal Funding

Each year, North Dakota builds upon its strong tradition of mitigating the impacts of disasters by pursuing opportunities through the Hazard Mitigation Assistance (HMA) programs.

HMA funds projects that are designed to keep our communities safer by preventing damages to public and private property, as well as reducing the risk to human life and safety. HMA consists of three (3) federally funded grant programs: the Hazard Mitigation Grant Program (HMGP), Pre-disaster Mitigation (PDM) Program, and the Flood Mitigation Assistance (FMA) Program.

HMGP is available statewide for all eligible applicants following a federally-declared disaster. The budget for HMGP is a sliding scale based on the overall size and cost of the declared disaster event on the Federal government. The state currently has a Standard Multi-Hazard Mitigation Plan (MHMP) which allows for up to 15% of the disaster costs to be set aside for the HMGP, and if the state completes an Enhanced MHMP, then they can receive up to 20%. Given North Dakota's lengthy history of disasters, HMGP has been a major source of funding.

The staff of the N.D. Department of Emergency Services (NDDES) also promotes the use of the PDM and FMA Programs when they are opened. Both PDM and FMA are annual grant programs that are nationally competitive. Budgets for both programs are based on appropriations, with the PDM Program funded by FEMA and the FMA Program by the National Flood Insurance Program (NFIP).

Whenever programs are available, NDDES staff provides press releases and sends out email notifications to notify eligible applicants across the state that funding is currently available and what the state's priorities currently are for project types. NDDES will also reach out to individual communities when they are aware of potential mitigation activities that could be eligible for submittal under the HMA programs.

NDDES staff will work with applicants to develop eligible project ideas. Once applications have been completed, they are presented to the State Hazard Mitigation Ranking Team which consists of representatives from different state agencies, such as the N.D. State Water Commission, N.D. Department of Transportation, State Historical Preservation Officer, N.D. Department of Health and NDDES. The team reviews all applications for completeness, cost effectiveness and environmental considerations, and then ranks each project to determine in what ordered they will be submitted, reviewed, and funded by FEMA.

Following are highlights of some of the projects funded through HMA:

<u>Minot Water Treatment Plant Flood Protection</u>

- Currently $30,012,091.00
- Consists of the Installation of a ¾ mile earthen levee and concrete floodwall
- The majority of the floodwall and earthen levee system are already complete. Mainly aesthetic items (painting and archway installation) remain.

Minot Water Treatment Plant Flood Protection.

Fargo Broadway Interceptor Sewer System Upgrade

- Currently $23,255,747.00
- Consists of the installation of a new force main from Main St. in downtown Fargo to the City's WWTP, along with the modification of 2 city owned lift stations to convey additional storm water runoff
- Project has been broken into 13 segments which are currently being bid and completed separately to properly manage the large project.

Morton County Graner Park Storm Shelter

- Final Cost $44,467
- Consisted of the purchase and installation of a Pre-Cast Concrete Storm Shelter in Graner Park located in southern Morton County.

Morton County - Graner Park storm shelter

City of Grafton Water Treatment Plant Generator

- Final Cost $356,468
- Consisted of the purchase and installation of a permanent generator to run the entire City of Grafton's Water Treatment Plant to provide potable water to the entire city, even during long power outage events.

City of Sherwood Emergency Sirens

- Final Cost $17,984
- Consisted of the purchasing and installation of a 115 db omnidirectional outdoor warning system on Main Street to provide the City with emergency weather notifications.

City of Sherwood Emergency Sirens

City of Sherwood Lift Station Generator

- Final Cost $28,500
- Consisted of the purchasing and installation of a permanent backup generator for the City's lift station to prevent wastewater backups during times of power outages.

NDDES Base Map

- Final Cost $1,000,000
- Consisted of the creation of a statewide seamless base map layer that would be utilized in all public safety answering points, as well as identifying areas that are considered high risk for previous damages and are effective areas for mitigation activities. The map also identifies all previous projects funded under the federal Public Assistance (PA) and HMA programs to prevent a duplication of projects and ensure

compliance with federal land use regulations.

<u>City of Fargo Lift Station with Green Space Storage</u>

City of Fargo Lift Station with Green Space Storage

- Final Cost $3,763,717
- Consisted of the construction of a new City Lift Station that would address sewer discharges from 2 separate and smaller lift stations that were not able to handle the current requirements from the system. Additionally, to prevent the new lift station from being overwhelmed, the City developed a small ring levee system that created two retention basins that hold storm water until it can be pumped through the new lift station system as designed. When not in use, the retention basins act as city owned baseball diamonds.

Mitigation Plans: A Team Effort

Multi-hazard mitigation plans (MHMPs) serve as blueprints for success.

As planners will tell you, the true benefit of planning is the process – the synergy that takes place with a team -- not necessarily the end product. It takes multiple perspectives to understand the factors placing communities at risk for natural and technological hazards and adversarial threats. Within the past five years, the N.D. Department of Emergency Services (NDDES) Mitigation staff have seen more jurisdictions engage a broad base of participants to examine each community's risk and vulnerability and leverage that data to identify viable mitigation projects.

Participants include local and tribal elected officials and administrators, first responders, school administrators, public health officials, librarians, water boards, voluntary agencies, cultural and historical organizations, planners, floodplain administrators, and the public – to only mention a few. As evidenced during a McLean County mitigation meeting, citizen participation is integral to success. It was a citizen, after listening to wildfire management concerns, who suggested an inventory of farms with water tanks.

A strategy in the *2014 State of North Dakota Multi-Hazard Plan* encourages the participation of historical and cultural organizations in the planning process. Another promotes development of mitigation-related building codes and ordinances. We are seeing more communities engaging historical and cultural organizations, floodplain managers and building and planning departments.

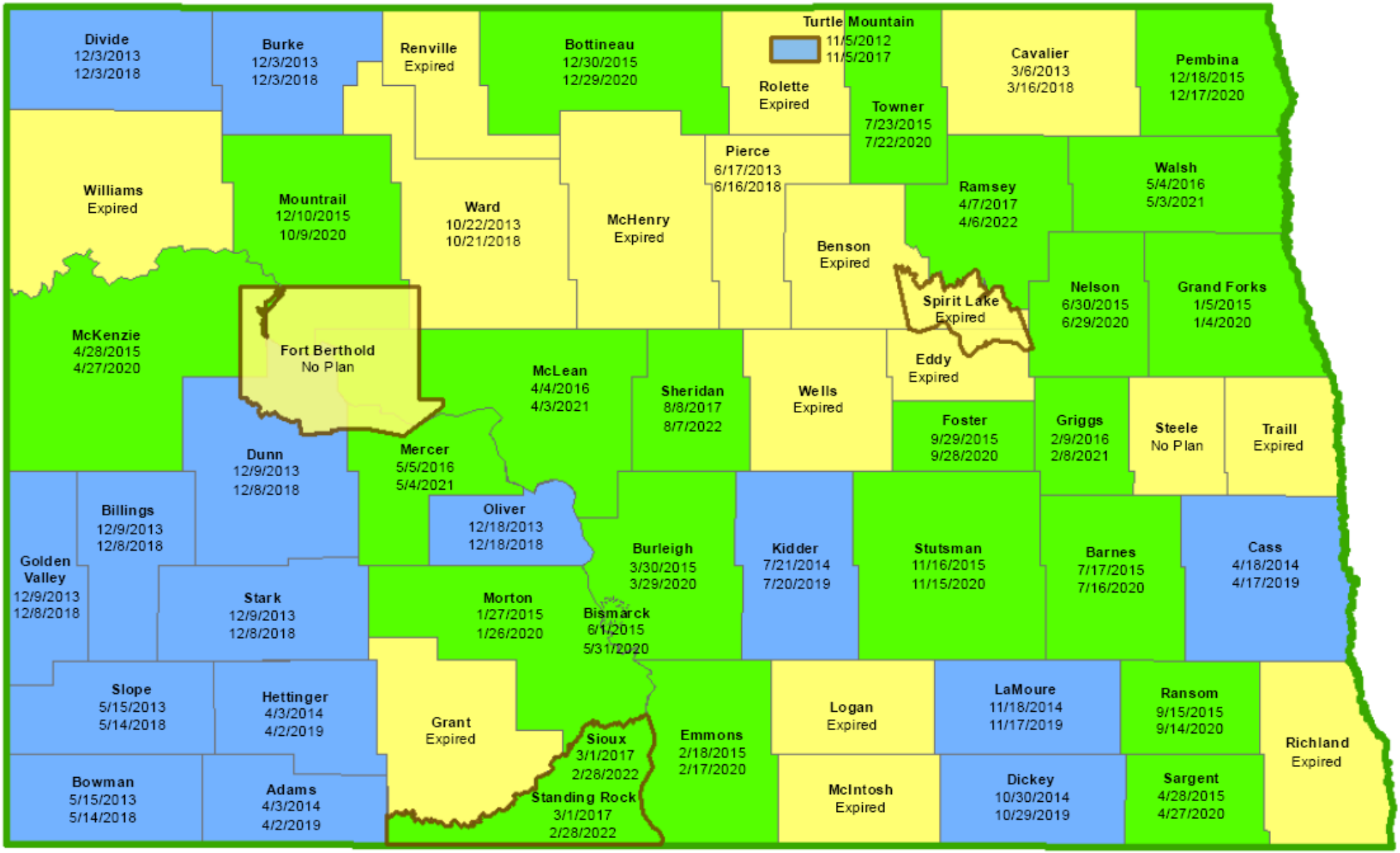
Our training efforts focus on the needs of local and tribal planning teams, and we work with our FEMA partners to tailor the G318 Mitigation Plan Workshop to support our local and tribal partners. The 2015 course emphasized floodplain management with presentations on the National Flood Insurance Program (NFIP) and Risk Mapping, Assessment, and Planning (RiskMAP). The curator for the State Historical Society of North Dakota and the Plains Art Museum discussed the importance of involving cultural and historical organizations in the mitigation planning process as a resource for understanding hazard vulnerability and for identifying mitigation projects.

For 2017, we moved the course to Dickinson, ND, a region where several plans will soon expire. The course included presentations on fire management, a topic of concern given our state's drought conditions, and the 2009 Dickinson tornado. The students participated in a field trip to the South Heart River in south Dickinson to discuss flood mitigation and to Red Trail Energy LLC in Richardton to identify potential vulnerabilities posed by hazardous materials.

As one of the class participants wrote in an evaluation, "this was one of the best hands-on courses." Another wrote, "This was a very worthwhile training opportunity."

Today, every county and tribal nation have federally approved plans, or their plans are under development. The NDDES Mitigation staff support plan development with on-site visits and technical assistance, and then review the plan to ensure compliance federal requirements before sending to the Federal Emergency Management Agency (FEMA) for final approval. As a result, plans submitted to FEMA consistently, and without edits, receive approvable pending adoption status.

Multi-Hazard Mitigation Plan (MHMP) Status



0 12.5 25 50 75 100 Miles

Plan Status

No Plan | Approved | Under Development | Expiring

NDMHMP Approved through 2/13/2019

Items in red are changes to action descriptions and participating agencies, as recommended by the State Hazard Mitigation Planning Team. Please note: A new mitigation action has been added; consequently numbering has changed for Mitigation Actions 27-35.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
Goal 1: Encourage and enhance sound state and local planning related to hazard understanding and mitigation.			
Objective 1.1: Increase and improve mitigation planning efforts at the state, tribal, and local levels through technical assistance, plan development, and plan updates.			
2014-1	Mitigation Planning	Provide technical and financial assistance to local and tribal jurisdictions developing or updating their mitigation plan. All local and tribal jurisdictions are encouraged to develop and adopt mitigation plans that meet the requirements of the Disaster Mitigation Act of 2000, enhance community resiliency, and meets the needs of the jurisdictions.	N.D. Department of Emergency Services (NDDES) -- Initiated outreach to help local and tribal emergency managers build stronger multi-hazard mitigation plans (MHMPs) that meet or exceed federal requirements. All 53 counties, 1 city and 4 tribal nations either have plans approved or under development, or are interested in applying for grants. Conducted training on the Threat and Hazard Identification and Risk Assessment (THIRA) to underscore its use in mitigation planning. Conducted G318 Hazard Mitigation Workshop in 2015 and 2017 to guide emergency managers and contractors through the mitigation planning process. Tailored workshops to meet participant needs as followed: • 2015 – Included presentations on the National Flood Insurance Program (NFIP) and Risk Mapping, Assessment and Planning (RiskMAP); and the value of cultural and historical organizations for plan development, presented by the State Historical Society of North Dakota and the Plains Art Museum in Fargo, ND. • 2017 –Moved course to Dickinson where several plans are due within the next few years. Featured presentations included fire mitigation and the 2009 Dickinson tornado.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			Conducted a field trip to South Heart River south of Dickinson and Red Trail Energy LLC in Richardton to discuss vulnerabilities and potential mitigation actions. N.D. Department of Agriculture (NDDA) – Grew partnerships with emergency managers with Commissioner Doug Goehring's appointment of an Agricultural Emergency Management Specialist. Provided requested support to one jurisdiction with its mitigation plan. Laid groundwork with groups of emergency managers to evaluate local needs and brainstorm future local and state capabilities to handle a variety of agricultural-related disasters and impacts. Conducted presentations at the N.D. Emergency Management Association and NDDES Hazardous Materials Conference in 2014, outlining special topics and resources available. In 2016, continued to grow partnerships with emergency managers with Commissioner Goehring's appointment of an Agricultural Emergency Management Specialist. Expanded groundwork with groups of emergency managers to continue evaluating local needs and brainstorm future local and State capabilities to handle a variety of agricultural-related disasters and impacts. Conducted presentations as requested outlining special topics and resources available from NDDA. Fire Marshal– Conducts fire investigation and prevention services at the state, local, and tribal levels in order produce information and data to understand fire hazards and vulnerabilities of communities to fire. Provides fire data to assist mitigation planners in plan development and updates.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			N.D. Forest Service – Provides technical assistance to local and tribal jurisdictions regarding fire data and living snow fence strategies. State Water Commission -- Communicates flood risk and enforces NFIP regulations based on the Flood Insurance Rate Maps developed by FEMA. Assists communities with their floodplain development ordinances, while encouraging higher standards to create a more flood-resilient community. Provides training and guidance to local floodplain administrators and private individuals. *CHANGE: NDSU Extension Service has been providing assistance to local and tribal mitigation plans; Extension Agents actively participate in plan development in many communities.* NDSU Extension Service – Supported local and tribal mitigation plan development by providing agricultural-related data, such as soils and water conditions.
Objective 1.2: Improve hazard understanding and risk assessments through individual hazard studies and analyses using digital data.			
2014-2	Mitigation Planning with Cultural & Historical Preservation Component	Promote the participation of cultural and historical preservation organizations and businesses in the planning process to ensure decisions made today on land use will not impact future needs to expand.	State Historical Society of North Dakota (SHS) – Collaborated with the Plains Art Museum of Fargo staff to develop and provide a presentation for a G318 Hazard Mitigation Planning Workshop course outlining mitigation planning support available through cultural and historical organizations. NDDES – Coordinated with the Federal Emergency Management Agency (FEMA), State Historical Society of North Dakota and Plains Art Museum of Fargo to emphasize the role of cultural and historical preservation organizations as a mitigation planning

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			resource during the 2015 G318 Hazard Mitigation Planning Workshop. Encourage local and tribal mitigation planners to involve cultural and historical organizations as part of their planning teams. NDSU Extension Service – Provides soil testing and instructional guidance on soil testing prior to composting of animals.
2014-3	Data Digitization	Provide a sound foundation for objective, scientific analyses of hazard vulnerabilities through the use of data digitization. Digital data is especially important for Geographic Information System (GIS) analyses. Current technology allows for the comparison of assets with hazard areas and a variety of other analyses. HAZUS-MH is one example of a loss estimation model that can quantify potential losses from a variety of hazards when provided with the appropriate digital data. Digitization of data such as state-owned buildings, critical facilities and infrastructure, dam inundation areas, and floodplains would allow for a better understanding of hazard vulnerabilities and improve mitigation planning in North Dakota.	NDDES – Continued development of a statewide seamless base map with spatially accurate digital imagery to one foot and sub-meter accuracy with vectors for all roads and improved trails. The map will be the foundation for unlimited data sets to support preparedness, response, recovery and mitigation planning initiatives. N.D. Information Technology Department (ITD) – Continued data digitization efforts. ITD stores the data for various agencies and it is then available via the GIS system. N.D. Department of Transportation (NDD0T) – Supported development of the statewide base map as resource for hazard mitigation. N.D. State Water Commission (NDSWC) – Continued to maintain inundation and flood risk maps with its current filing system and is working to centralize these geospatial files. NDDA – Verified and maintained apiary updates (hive locations) and noxious weed updates. NDDA continues to maintain these GIS based-data products.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			N.D. Fire Marshal's Office – Conducts fire investigations and inspections to improve the understanding of fire risk reduction by analyzing digital data and information collected through fire hazard assessments. Conducts fire investigations and inspections to improve the understanding of fire risk reduction by analyzing digital data and information collected through the National Fire Incident Reporting System, which is a requirement of the United States Fire Administration. In addition, fire investigations may use fire modeling programs such as Fire Dynamic Simulator, Smoke View, and FDS & EVAC software to visualize driven fluid flow patterns of smoke and heat transport from fires. N.D. Department of Health – Collaborates with NDDES to maintain database of service areas for certified emergency medical service providers. N.D. Forest Service ---– Continues to quantify forested acres including windbreaks, riparian areas and community trees in smaller towns. *CHANGE: N.D. Department of Mineral Resources, Oil and Gas Division, was added since it has a role in this mitigation action.* N.D. Department of Mineral Resources, Oil and Gas Division— Provide communication with partner entities and mapping capabilities as the agency with expertise in mineral development in the state.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
2014-4	Debris Management Plans	*CHANGE: Tribal nations added since the program encompasses both local and tribal levels.* Support the development of debris management plans at the local and tribal levels. There is a need for coordinated educational effort, for county and regional planning and for development of staff, infrastructure and tools to properly address debris management to mitigate potential health impacts.	N.D. Department of Health (NDDoH) – Coordinated with the North Dakota Solid Waste and Recycling Association to develop debris management workshops. Discussed debris management planning with emergency managers, and invited their participation at workshops. NDDES – Coordinated with NDDoH to conduct outreach with the emergency managers to encourage development of debris managements plans.
Goal 2: Enhance the public's awareness of hazards.			
Objective 2.1: Provide the public with information that allows individuals to make sound personal and financial decisions before a disaster threatens.			
2014-5	Public Education	*CHANGE: Reflects initiative by federal and state officials to encourage participation of State and Local Intelligence Center in the mitigation planning process.* Support educating the public on a regular basis by engaging media during hazardous awareness months, prior to spring flooding and other seasonal weather hazards. This outreach/ education would also include adversarial (i.e. Highly Violent Extremist (HVE) or Terrorism) threats (purposed or imminent).	NDDES -- Initiated the Ready for Winter Weather and Resolve to be Ready campaigns during 2014-2016 and supported the hazardous materials conference in October 2014 and 2016. State and Local Intelligence Center (SLIC) -- Developing a strategy which involves leveraging opportunities to educate and discuss adversarial (HVE or Terrorism) threats (purposed or imminent) with the public. U.S. Department of Homeland Security (USDHS) -- Promoted the use of target hardening measures (i.e. perimeter fencing, CCTV, alarms, entry control procedures, robust cyber security systems and software applications, security staffing at key sites etc.). Collaborated and/or assisted in conducting site vulnerability and security assessments to assess security postures, uncover

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			vulnerabilities and present options for consideration to mitigate vulnerabilities. Assists in developing, facilitating and promoting a statewide program for public and private infrastructure stakeholders with the U.S. DHS "See Something Say Something™" campaign. NDSWC -- In addition to ongoing efforts, added a flood risk aspect to its water education program targeting grade and middle schoolers. The NDSWC hired a public information officer (PIO) in 2014 to coordinate information and educate the public about the activities of the NDSWC National Weather Service (NWS) Bismarck and Grand Forks Offices -- Continue to support awareness weeks across the state of North Dakota. Severe Summer Weather Awareness Week was April 28 – May 2, 2014 and Severe Winter Weather Awareness Week was October 27 – 31, 2014. Supported awareness weeks across the state of North Dakota. Awareness weeks for Severe Summer Weather and Severe Winter Weather were held in both 2015 and 2016.
Goal 3: Reduce impacts to future development through the encouragement of wise land use planning.			
Objective 3.1: Use land management tools to mitigate disasters before construction occurs.			
2014-6	Support Local Zoning	Encourage and support jurisdictions adopting a hazard mitigation and future risk assessment process when making	N.D. Department of Commerce (NDDoC), NDDES, NDSWC – Provided technical support to local and tribal mitigation planners; identified need to evaluate development of strategies regarding facility placement, building permits and zoning.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
		decisions regarding facility placement, building permits and zoning.	Encouraged local and tribal mitigation planners to include land use experts as part of the mitigation planning teams.
2014-7	Local Master/ Comprehensive Plans	Encourage local zoning and planning boards and commissions to develop and maintain master plans and/or comprehensive plans for their community. The building codes, zoning, and ordinances outlined in these plans can be used to regulate development in hazardous areas and to improve the disaster resistance of their future development. Hazard mitigation becomes much more cost effective when handled before structures and infrastructure are placed in hazardous areas.	*CHANGE: N.D. State Water Commission (NDSWC) was added since it has a role in this mitigation action.* NDDoC, NDSWC, NDDES – Encouraged local and tribal mitigation planners to outline methods to incorporate risk assessment data and mitigation actions into master/comprehensive plans, in keeping with federal mitigation planning requirements. Identified the need to develop recommendations for outreach to local and tribal jurisdictions to promote disaster resistance measures as part of future development. State Fire Marshal -- Supports state, local and tribal jurisdictions to provide zoning of land in order to reduce fire hazard abatement prior to using the land to construct buildings, which may pose undue risks to disaster mitigation and management practices. Encourages state, local and tribal jurisdictional zoning, planning board, and commissions to adopt and regulate fire, building, residential, mechanical, gas, plumbing and electrical codes and ordinances through the master or comprehensive planning processes, which recognizes the communities' vulnerability to fires, and can effectively and efficiently abate the fire risk by implementing zoning and land management policies and practices to encourage construction and maintenance of fire resistive structures and infrastructures.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			Supports state, local and tribal jurisdictions to adopt the most recent fire, building, residential, mechanical, gas, plumbing and electrical codes in order to maintain an effective and efficient fire hazard abatement mitigation policy.
2014-8	Local Mitigation Effectiveness	*CHANGE: The majority of jurisdictions adopt the North Dakota State Building Code. This code is updated every three years by the state. This action encourages, rather than requires, local governments to ensure codes are up to date.* ~~Establish state hazard mitigation planning requirement for local jurisdictions to evaluate local building codes and zoning ordinances to determine effectiveness to mitigate hazards.~~ Encourage local jurisdictions to ensure building codes and zoning ordinances are up to date; and promote mitigation principles through effective implementation of codes and ordinances.	NDDES – Encouraged local and tribal mitigation planners to consider discussing building codes and zoning ordinances when developing/updating mitigation plans; nearly all plans reviewed in late 2013 and 2014 identified the need to review outdated building codes and zoning ordinances with planning teams and developing mitigation actions to evaluate these codes and ordinances. Efforts continued in 2015 and 2016. *CHANGE: The N.D. Department of Commerce has been added to this task since it has oversight on a state level for encouraging local jurisdictions to adopt building codes.* NDDoC – Provides assistance to local jurisdictions to ensure adoption and implementation of building codes; provided guidance and sample ordinances to communities.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
Goal 4: Reduce impacts of flooding to people and property in North Dakota.			
Objective 4.1: Reduce property and infrastructure losses to developed areas during periods of flood.			
2014-9	North Dakota Silver Jackets	Support North Dakota Silver Jackets actions towards basin wide hydrological studies to determine potential flood control projects, measures, and mitigation activities that could be supported.	NDSWC – Recorded the following: • Completed the James River investigations study and LiDAR for the basin. • Completed Knife River and Beaver Creek hydrologic and hydraulic (H&H) studies. • Accomplished the Sheyenne River hydrologic and hydraulic analysis for the stretch from Baldhill Dam through Valley City in support of Valley City flood protection. • Supported the Mouse River Enhanced Flood Protection Project with numerous studies; completed the H&H model for the entire basin. The U.S. Army Corps of Engineers is developing a new unsteady state model for the entire basin (US and Canada). U.S. Army Corps of Engineers (USACE) – Recorded the following: • Completed Mouse (Souris) River Hydrometeorological Data Network Analysis Study. • Completed the Mouse River System-Wide Improvement Framework (SWIF)/Interim Risk Reduction Measures Study. • Completed pre-flood Planning Information Packages (including Burlington, Sawyer, and Velva). • Completed the Emergency Action Plan Guidebook Template. • Completed the Red River of the North – Design Handbook for Earthen Ring Berms. • Initiated the Mouse River Flood Plain Rural Structures Inventory which is in progress. • Completed the on-structural Flood Risk Reduction measures workshop.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			• Completed the Mouse River Basin Emergency Action Plan Workshops in June 2015. • Began the Mouse River Unsteady Flow HEC-RAS Model – began June 2015 – Ongoing. • Completed Mouse River hydrology (HEC-HMS) and hydraulics (HEC-RAS) models under the Flood Plain Management Services Program (FPMS) (while not Silver Jackets, it is a related activity). • Initiated the Mouse River flood Inundation Mapping Project, Phase 1, Burlington to Verendrye.
2014-10	Basin-wide Water Management Planning	Conduct comprehensive basin-wide planning in the five major basins in North Dakota – the Missouri River Basin, the James River Basin, the Souris River Basin, the Red River Basin, and the Devils Lake Basin – to allow for a consistent and collaborative approach to flood and drought mitigation plans and projects particular in large population areas. Looking at the issues that face the basins from a regional and watershed perspective rather than through single jurisdictions typically results in a more favorable and thorough plan of action.	NDSWC – Recorded the following: • Provide support to the Souris River in the form of the Minot Flood Control Project and address downstream concerns. • Continued support to the Devils Lake Basin by continued operation of the East and West End Outlets. • Updated the Ordinary High Water Mark (OHWM) on the Missouri River north of Bismarck. • Continues to be an active participant in the Missouri River Recovery Implementation Committee (MRRIC) which includes the USACE and basin wide partners. • Continues to develop and improve models focusing on the Knife River, Beaver Creek, Pembina River, and other tributaries of the Red River. • Monitors water levels of several closed basin lakes including Rice Lake. • Completed the Central North Dakota Water Supply Project Alternative Study report which evaluates several options that would supplement the Red River Valley current water supply with Missouri River water. • Support Devils Lake, Red River, Missouri River, and Upper Sheyenne River basin joint boards to manage water on a

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			watershed basis, with regular meetings, and the development of basin water management plans. • As part of the Red River Watershed Feasibility Study, hydrology models for all sub-watersheds in the Red River watershed in the U.S. have been updated. A distributed detention analysis is also being completed for each sub-watershed (only the Park River and Pembina River watersheds remain to be completed). The analysis will determine the amount of temporary flood water storage necessary to meet the 20% peak flood flow reduction on the Red River and the corresponding volume and peak flow reduction required for each sub-watershed. The 20% reduction goal is described in the Red River Basin Commission (RRBC) Long Term Flood Study Report. Hydraulic models are also being updated in order to analyze hydrographs of various scenarios on the Red River and lower portions of each tributary. • *The Corps of Engineers and the RRBC are co-chairing committees to develop/update a Comprehensive Watershed Management Plan and Natural Resources Framework Plan for the Red River watershed.* USACE – Initiated development of a comprehensive watershed management plan (CWMP) as part of the Corps specifically authorized Red River basin-wide feasibility study; the Minnesota Red River Watershed Management Board and the North Dakota Red River Joint Water Resource District are the study sponsors. *See the "Comprehensive Study of the Red River Underway" portion of the 2014-2016 Progress Report: Mitigation in North Dakota.*

Action ID #	Action Title	Action Description	2014-2016 Progress Report
2014-11	NFIP, RiskMap & CRS Program	*CHANGE: Revision more accurately captures intent of the action and NDSWC objectives with NFIP and RiskMAP.* ~~Increase support of the National Flood Insurance Program (NFIP) and the Risk MAP program through community engagement and public outreach. The NFIP is a mechanism to reduce the vulnerabilities to flood through local regulation and the opportunity for individuals to purchase flood insurance. Both of these opportunities are made available through the use of Flood Insurance Rate Maps which are produced by the Risk MAP program.~~ Provide guidance to communities who participate in the National Flood Insurance Program (NFIP) to ensure their achievement in the flood loss objectives under the NFIP. This is accomplished by providing technical assistance, evaluating community performance, implementing NFIP floodplain management activities, and strengthening community floodplain management expertise. RiskMAP provides high quality flood maps and information, tools to better assess the risk from flooding and planning and outreach support to communities to help	NDSWC – Overseeing the project management of seven active FEMA Risk MAP projects through FEMA's Cooperating Technical Partners (CTP) Program. Burleigh County received new Flood Insurance Rate Maps dated 8/4/2014. During 2014, 33 community assistance visits/contacts were made, in addition to the countless technical assistance that was provided on a daily basis to the 327 communities in ND who participate in the NFIP. The purpose of this strategy is to educate communities on flood risk, encourage enrollment in the program, identify risk, implement and maintain development regulations, and create Flood Insurance Rate Maps (FIRMs). Support the State's requirement for structures to be built at least one foot above the base flood elevation and encourage communities to adopt standards higher than the state and federal minimum NFIP requirements. Promote the Community Rating System (CRS) as a way to acknowledge the higher standards communities are implementing and extend a discount to flood insurance policy premiums. Provide guidance to communities who participate to ensure their achievement in the flood loss objectives of the NFIP. This is accomplished by providing technical assistance, evaluating community performance, implementing NFIP NDDES – Coordinated with the NDSWC to provide NFIP data to emergency managers regarding participation in the program as well as severe repetitive loss structures.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
		them take action to reduce, or mitigate, flood risk.	Participated in Community Coordination and Outreach (CCO) and Public House Meetings held by the NDSWC, NFIP, and RiskMAP Program for the development and implementation of new floodplain maps for western Cass County, to include the cities of Mapleton and Harwood, and also Ward County, to include the cities of Minot, Sawyer, and Burlington. Participated in the initial kickoff meetings for the development of Large Scale Base Level Engineering (LSBLE) being developed by the NDSWC, NFIP and RiskMAP Program for the eastern 34 counties of North Dakota. The purpose of the LSBLE is to develop usable flood and risk analysis data for every stream mile in each of the identified counties. The level of analysis for each area is dependent on community development, flood risk and the need for base level data. Insurance Department – Encourages homeowners, business owners and political subdivision to purchase flood insurance if they have building property In areas known to flood.
2014-12	Property Acquisition, Relocation, Elevation and Floodproofing	Support the implementation of property acquisition, relocation, elevation and floodproofing at the local level through technical and financial assistance and public education. The acquisition priority is with repetitive flood loss and severe repetitive flood loss properties	NDSWC – Continued effort to purchase properties impacted by the Mouse River Enhanced Flood Protection Project. This large-scale project entails purchasing vacant lots, businesses, homes and properties to make room for the flood protection planned for the City of Minot. Provide information regarding flood insurance claims and Increased Cost of Compliance. Encourage acquisition, relocation, elevation and floodproofing as mitigation measures while implementing NFIP regulations.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			NDDES – Guided communities to leverage the Unified Hazard Mitigation Program (HMA) Programs and Community Development Block Grants (CDBG) to create green space along rivers and lakes by acquiring more than 1,400 properties in flood-prone areas. The estimated cost benefit is $386,400,000 using the national pre-determined benefit amount of $276,000 per property. Many of these properties were located in north central and northeastern North Dakota where it flooded in spring 2017.
Objective 4.2: Prevent flood losses due to dam failures.			
2014-13	Dam Safety	Improve North Dakota's state dam safety program to reduce the risk of dam failure and reduce the potential consequences if a failure were to occur.	NDSWC — Conducting an ongoing project to review and update the hazard classification of dams in the state, development of emergency action plan guidelines, and holding a Dam Engineering Fundamentals seminar with the goal of increasing the level of knowledge in the local engineering community regarding dams and dam safety.
2014-14	Dam Status Review	Periodically review dam status, conditions, designs, permitting of new dams and work with owners to encourage proper maintenance and repair their dams.	Bureau of Indian Affairs – Ensures safe operations of dams by adhering to a schedule for maintenance and inspections. These efforts are in coordination with North Dakota's tribal nations. U.S. Bureau of Reclamation – Conducting an eight-year schedule for reviewing our three dams in North Dakota; E.A. Patterson Dam in Dickinson; Jamestown Dam; and Heart Butte Dam. Every fourth year of the cycle, the Reclamation conducts a Period Review (PR) and every eighth year a Comprehensive Review (CR). An Annual Site Inspection (ASI) is done on the remaining years.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			Jamestown is due for a CR in 2019, and Heart Butte and Patterson Dams are scheduled for a CR in 2018. NDSWC – Inspects non-federally owned high hazard and medium hazard dams and makes recommendations to the dam owners regarding necessary maintenance and repairs. The NDSWC also issues construction permits for the construction of new dams or modification of existing dams. An inventory of dams in the state and their status is also maintained. USACE – Implemented new risk-informed inspections and evaluations. A periodic assessment (to be done every 10 years) was completed for Baldhill Dam in 2013; and one was conducted for Homme Dam in 2015. N.D. Game and Fish Department -- Coordinates with the State Water Commission regarding safety checks, cost share issues and technical expertise regarding fisheries dams. N.D. Department of Mineral Resources -- North Dakota Geological Survey, a division within Department of Mineral Resources, offers geotechnical expertise for the state. Specific topics include landslides and flood mapping repositories. Natural Resource Conservation Service – Assist the Sponsoring Local Organizations (SLOs) of all project dam sites on which NRCS provided assistance. The NRCS has an active Operation and Maintenance Agreements in the Annual O&M Inspections for the sites. NRCS informs the SLOs upon the expiring of the O&M agreement that the site will continue to function as designed if O&M actions continue. NRCS assists the NDSWC, as needed, with

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			formal 5-Year Inspections of all NRCS project sites. In addition to that work, we occasionally provide engineering services for repair/maintenance work. Currently we are working on a principal spillway repair for Fish Creek Dam. *CHANGE:* N.D. Parks and Recreation Department – The agency has been removed as a stakeholder after clarifying it did not have a role in ensuring dam safety and security.
2014-15	Dam Owner Education	*CHANGE: Reflects initiative by federal and state officials to encourage participation of State and Local Intelligence Center in the mitigation planning process.* Work with local state and federal agencies to secure additional financial support to improve dams and educate for dam owners. This would help ensure that dams are properly maintained and that necessary repairs are made. This outreach/ education would also include adversarial (i.e. Highly Violent Extremist (HVE) or Terrorism) threats (purposed or imminent).	NDSWC -- Inspects non-federally owned high hazard and medium hazard dams and makes recommendations to the dam owners regarding necessary maintenance and repairs. In May 2016, a Dam Engineering Fundamentals seminar was held with the goal of increasing the level of knowledge in the local engineering community regarding dams and dam safety. An effort is currently underway to develop a dam maintenance manual for ND dam owners to increase their level of knowledge regarding dam maintenance. Funding for both the seminar and the manual was obtained through federal National Dam Safety Program grants administered by FEMA. Bureau of Reclamation (BOR) - Reclamation Dams in North Dakota are federally owned. BOR invites local agencies to our dam operator training and dam safety trainings when they are offered. USACE – Implementing a new policy for inspecting, operating and maintaining local flood protection projects (most commonly associated with levees). Much of the new policy is being implemented in cooperation with FEMA. Programs and funding authorities for USACE dams are generally limited to operating and maintaining federal projects.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			N.D. Game and Fish Department -- Coordinate with the State Water Commission regarding cost share issues opportunities. Bureau of Indian Affairs – Provides funding to tribal nations for routine operations and maintenance. Natural Resource Conservation Service – Provides assistance, as resources allow, to SLOs/local dam owners for inspection and dam safety training. NRCS has launched and maintains a national web-based dam monitoring tool called DamWatch that provides real-time monitoring of nearly 12,000 dams on which NRCS provided assistance to local sponsors throughout the United States. In addition to being a monitoring tool, the application provides a "one-stop" source for critical dam documentation such as drawings, inspections, historical photos, and emergency action plans. ND NRCS has reached out to nearly all SLOs to introduce the DamWatch tool and to solicit them to become users. All data for data for those dams on which NRCS provided assistance on at one point have been uploaded for the state. *CHANGE:* N.D. Parks and Recreation Department – The agency has been removed as a stakeholder after clarifying it did not have a role in ensuring dam safety and security. *CHANGE:* Agencies added to reflect the initiative by federal and state officials to encourage participation of the SLIC in the mitigation planning process. SLIC – Developing a strategy which involves leveraging opportunities to educate and discuss with dam owners/ operators about adversarial (HVE or Terrorism) threats (purposed or imminent).

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			U.S. Department of Homeland Security-- Promote the use of target hardening measures (i.e. perimeter fencing, CCTV, alarms, entry control procedures, robust cyber security systems and software applications, security staffing at key sites etc.). Collaborate and / or assist in conducting site vulnerability and security assessments to assess security postures, uncover vulnerabilities and present options for consideration to mitigate vulnerabilities.
2014-16	Review Dam EAPs	Review Emergency Action Plans (EAPs) to ensure that these plans address actions to reduce the potential consequences of dam failure. EAPs for all high hazard dams should be required, and regular EAP updates should be encourages. A comprehensive program could be achieved through legislation and the associated funding to improve the existing state program.	NDSWC – Enacting House Bill 1097, which was passed by the 2015 ND Legislature and went into effect August 1, 2015. This bill requires the owners of all high and medium hazard dams to develop, periodically test and update EAPs. Approximately 85% of high hazard and 52% of medium hazard dams in the state currently have an EAP. Bureau of Reclamation --Exercises EAPs on an eight-year schedule. Every fourth year of the cycle BOR conducts a Table Top Exercise and every eighth year of the cycle BOR conducts a Functional Exercise. An Orientation meeting is conducted yearly to review the EAP. Jamestown and Heart Butte conducted Functional Exercises in 2014, and Dickinson conducted a Functional Exercise in 2013. USACE -- Developed new inundation mapping for all its dams under a center of expertise using national standards and formats. New mapping for Baldhill and Homme dams were in final review stage. An EAP exercise was conducted for Homme and Baldhill Dams at Lac Qui Parle April 2015. N.D. Game and Fish Department – Reviews EAPs to ensure safe operations of fisheries dams. The SWC requested/required all

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			owners of dams in the state that fell into a high hazard classification to develop Emergency Action Plans. Natural Resource Conservation Service – Provides technical assistance, as resources allow, to owners of dams with which the agency has previously provided financial and/or technical assistance. In 2016, the agency worked with the Morton Water Resource District (WRD) on an update to the Harmon Lake Dam EAP by completing a revised hydraulic model and inundation mapping at their request. NRCS also provided a review for the Renwick Dam EAP developed by Houston Engineering. *CHANGE:* N.D. Department of Mineral Resources and the N.D. Parks and Recreation Department – These agencies were removed as stakeholders after clarifying they do not have a role in ensuring dam safety and security.
Goal 5: Reduce impacts of severe summer and winter weather to people and property.			
Objective 5.1: Improve severe weather warnings and public notifications to increase personal protective actions during severe summer and winter weather.			
2014-17	Outdoor Warning Systems	Support the updating of outdoor warning systems in local communities through technical and financial assistance and public education.	NDDES – Encourages local and tribal jurisdictions to apply for funding through the Hazard Mitigation Grant Program (HMGP) 5% Initiative fund whenever a disaster is declared and funds are available. The NDDES Homeland Security Grants section works with local jurisdictions to purchase and install Outdoor Warning Systems during its program grant periods as well.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			NWS -- Support the updating of outdoor warning systems in local communities through technical assistance and public education. Financial assistance may also be provided by NDDES.
2014-18	Emergency Notification Systems	Work with state, federal and local agencies to procure and implement emergency notification systems that cover as many modes and methods with new technology devices supporting next generation interaction 911, phones, smart TVs, and smart message boards.	NDDES – Developed and received funding for the City of Minot to update its Citywide Communications System to provide Emergency Notifications associated within impending hazards. The communications upgrade allowed coverage for up to 90% of the City population through the use of cell phones, warning sirens, TV broadcasts, and radios. Upgrades included the installation of High Speed Wire Area Network (WAN) connections to replace digital subscribers' lines and Virtual Private Networks, higher speed internet connections for control and SCADA monitoring of critical infrastructure, the purchase and installation of three (3) 20 KW generators are communications sites, and installation of two (2) monopoles.
2014-19	Retrofit Communication Sites	Retrofit communication sites by installing guy wires, and ensuring system redundancies through satellites, portable towers and new technology devices.	NDDES – Completed and closed an HMGP approved project to purchase and install emergency backup generators at ten (10) NDDOT communications sites across the State of North Dakota. DOT – Continuing upgrades to communication tower sites. The tower sites are used for DOT communications as well as by law enforcement and emergency response personnel. FAA requires that towers over 300' need to have lights (most DOT towers fall into that requirement). The existing buildings at the radio tower sites house the electronics for the DOT, DES, and in some instances the National Guard, U.S. Air Force (USAF), Federal Bureau of Investigation (FBI), N.D. Bureau of Criminal Investigation (BCI), Federal Aviation Administration

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			(FAA), U.S. Fish and Wildlife Services (USFWS) and other state and federal agencies that utilize our towers. The existing buildings are located right next to the base of the towers. Over the years ice that has built up on the towers and cables has fallen on and damaged the structural integrity of the buildings. Many buildings have had two or three roofs replaced over the last number of years. Damaged, leaky roofs put the electronics at risk, and made the buildings susceptible to mice and rodent infestation which has also damaged equipment. The propane tanks are being replaced as they are old, rusty and a safety hazard. In some cases, because the valve is outdated, and DOT is having problems getting them refilled. The generators are being replaced because they are old, unreliable, and in many cases a serious maintenance issue as DOT workers frequently have to fill oil. Fencing is installed around the entire site, to include the tower, building, propane tank, and guy wires. The fence installation is for security and safety. There have been instances around the state where snowmobilers and ATV riders have been injured or killed when they impacted unfenced guy wires. Initially there were approximately 37 tower sites that needed upgrading. This will be the third phase of a four phase replacement process. We have completed 18 upgrades through the first two phases. DOT has completed phase three of the building replacement project. Phase four would involve the final 10 existing sites/building replacements, this is planned for the 2017/2019 biennium if funds are available.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			The DOT has completed the construction of 4 new tower sites. *CHANGE:* Information Technology Department and the National Weather Service – These agencies been removed as a stakeholder after clarifying they do not have a role in this mitigation action.
Objective 5.2: Provide safe places for the public to take protective actions during extreme weather events.			
2014-20	Tornado Safe Rooms & Shelters	Support the implementation of tornado safe rooms and shelters in buildings through technical and financial assistance and public education.	NDDES—Developed and received funding for the purchase and installation of two (2) pre-cast concrete emergency storm shelters that have been placed in Graner Park and Harmon Lake Recreational Area in Morton County, ND. These pre-cast units are engineered to meet FEMA community shelter specifications to include proper storm doors and venting, they are sized based on the average number of people that would need emergency shelter in those area, and can withstand the wind speeds of an EF 5 level tornado (250 MPH).Based on the success of these shelters, additional communities across the state are also planning to apply for storm shelters for recreational areas, mobile home parks, and larger community venues where shelter is not currently available.
Objective 5.3: Improve resiliency of critical facilities and infrastructure from strong wind, heavy snow, hail and flood events.			
2014-21	Snow Fences	Support the development of snow fences at the local level through technical and financial assistance and public education.	NDFS and DOT – Continue to support this initiative as important; however, funding is no longer available; however, as if it comes available, agencies would make this a priority. A living snow fence is a windbreak of trees and shrubs strategically planted to slow down, catch or channel snow, keeping it from reducing visibility and blocking roads or intersections. Since 1998, 40 counties initiated 594 projects. Approximately 951.4 miles of

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			trees were planted to protect 270 miles of roads. Current sources of cost-share can be found at the UDSA Farm Service Agency and Natural Resources Conservation Service. The North Dakota Association of Soil Conservation Districts administers the Outdoor Heritage Fund Grant - ND Statewide Conservation Tree Planting Initiative that provides cost-share for a variety of conservation tree plantings including living snow fences.
2014-22	Electric Infrastructure Protection	*CHANGE: Reflects initiative by federal and state officials to encourage participation of State and Local Intelligence Center in the mitigation planning process.* Promote the burial of electrical power lines and other electrical mitigation activities. This outreach/ education would also include adversarial (i.e. Highly Violent Extremist (HVE) or Terrorism) threats (purposed or imminent).	NDDES -- Enacted 32 projects at an estimated cost of $13,340,424.17 to bury power lines, replace standard transmission lines with heavy duty line structures and install guy wires. As an example, a $1,823,739 mitigation project allowed Minnkota Power Cooperative to replace 34 standard transmission lines structures with heavy duty line structures designed to reduce the number of power lines that fall during severe storm events. Approximately 89 miles of power lines owned by RECs have been buried and 54 structures replaced or improved. We have had active participation in the program by our RECS, which have included Minnkota, Dakota Valley, Northern Plains, Sheyenne Valley, Square Butte, Cavalier Rural, Great River Energy, Central Power and Cass County. The cities of Lakota and Underwood have also pursued projects to convert all above ground power lines to underground lines to provide uninterrupted power to residents. N.D. Association of Rural Electric Cooperatives (NDARECs) -- RECs have retired approximately 45.24 miles of overhead lines. We have installed approximately 185.9 miles of new underground lines. RECs continue to retired overhead lines as system updates are needed. They continue to install underground utility lines throughout ND whenever feasible.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			Cass County Electric Cooperative (CCEC) installed a total of 133 miles of underground cable in 2014. The breakdown is as follows: 83 miles for new construction, 28 miles for cable replacement, and 22 miles for other system improvements including customer revamps. *CHANGE:* Agencies added to reflect the initiative by federal and state officials to encourage participation of the SLIC in the mitigation planning process. SLIC – Developing a strategy which involves leveraging opportunities to educate and discuss adversarial (HVE or Terrorism) threats (purposed or imminent) with power providers. USDHS -- Promote the use of target hardening measures (i.e. perimeter fencing, CCTV, alarms, entry control procedures, robust cyber security systems and software applications, security staffing at key sites etc.). Collaborate and / or assist in conducting site vulnerability and security assessments to assess security postures, uncover vulnerabilities and present options for consideration to mitigate vulnerabilities.
2014-23	Emergency Power at Critical Facilities	*CHANGE: Reflects initiative by federal and state officials to encourage participation of State and Local Intelligence Center in the mitigation planning process.* Encourage back-up generators or alternative solutions such as solar panels for emergency power until the service is restored for critical facilities, special needs	NDDES – Continuously working with applicants to develop project applications to purchase and install emergency backup power for critical facilities including lift stations, water treatment plants and waste water treatment plants. Currently working with applicants to develop applications to fund generators to power emergency services such as police and fire departments, as well as hospitals. NDARECs – Promotes use of back-up generators or alternative solutions. RECs report a balance of diesel generators owned by

Action ID #	Action Title	Action Description	2014-2016 Progress Report
		facilities, utility infrastructure, and emergency shelters. This outreach/ education would also include adversarial (i.e. Highly Violent Extremist (HVE) or Terrorism) threats (purposed or imminent).	members. Renewable energy facilities are interconnected with distribution systems. Three new double throw meters have been installed. This allows for backup generator use in the event of an emergency power outage. CCEC has an active load management program that promotes the use of back-up generation for load control purposes. There are approximately 150+ units at member sites that are member owned. In addition there is a 925 methane generator connected to the distribution grid. RECs report a balance of diesel generators owned by members. Renewable energy facilities are interconnected with distribution systems. Double throw meters have been installed. This allows for backup generator use in the event of an emergency power outage. *CHANGE:* Agencies added to reflect the initiative by federal and state officials to encourage participation of the SLIC in the mitigation planning process. SLIC – Developing a strategy which involves leveraging opportunities to educate and discuss adversarial (HVE or Terrorism) threats (purposed or imminent) with critical facility operators. USDHS -- Promote the use of target hardening measures (i.e. perimeter fencing, CCTV, alarms, entry control procedures, robust cyber security systems and software applications, security staffing at key sites etc.). Collaborate and / or assist in conducting site vulnerability and security assessments to assess security postures, uncover vulnerabilities and present options for consideration to mitigate vulnerabilities.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
Goal 5: Reduce impacts of severe summer and winter weather to people and property.			
Objective 5.3: Improve resiliency of critical facilities and infrastructure from strong wind, heavy snow, hail and flood events.			
2014-24	Flood-proofing Critical Facilities	Promote flood proofing activities to protect critical facilities, utility infrastructure, government buildings, and residential structures. Examples of flood-proofing include anchoring buildings and tanks, reinforcement of walls with water resistant materials, installing watertight doors and windows, sealing basements and walls to prevent seepage, installing permanent pumps, installing backflow prevention valves on utilities, elevating utility systems and other equipment, and taking measures to protect water and sewer systems from floodwaters. Creative flood-proofing measures can be used to protect ecologic and other values. For example, fisheries could be protected through measures that prevent the crossover of species during floods.	NDDES – Developed and received funding to create permanent flood protection around the City of Minot's Water Treatment Plant. The City's water systems were infiltrated during the 2011 record flood, and the City was placed on a boil order for 6-8 weeks until the water systems could be repaired and brought back to normal function and capacity. The current project will protect the City's Water Treatment Plant to the 2011 flood event plus 5.6 feet to ensure the estimate 102,000 people (city and rural residents) that depend on this facility will always have clean drinking water in the future. Developed and received funding to place permanent flood protection around the City of Fargo's Waste Water Treatment Plant. The critical facility is located in the 100-year floodplain and could potentially be damaged in high storm events and leave approximately 160,000 city and rural residents without waste water services which could lead to sewage backups into public and private properties, as well as uncontrolled dumping of waste water into the Red River of the North and its tributaries. The proposed flood protection will protect the Waste Water Treatment plant to the 500-year flood event level. NDSWC – Involved with following flood-proofing activities: road raises for access during high water; dike or levee construction; installing sump pumps/storm water lift stations; redirecting rain and snow runoff; cleaning culverts; redirecting rain/snow runoff;

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			cleaning culverts, canals and waterways of debris; weed control in and along waterways; property acquisition in floodways; channel improvements/diversions to move flood waters around/away from critical infrastructure; detention areas/flood control dams; and having personnel and equipment that can respond quickly to flooding situations or ice jams.
Goal 6: Reduce impacts of drought and wildland fires to people and property.			
Objective 6.1: Support practices that reduce drought losses and impacts.			
2014-25	Drought Task Force	*CHANGE: Modifications more accurately reflect intent of the mitigation action.* Work with the ND Drought Task Force to implement mitigation strategies; ~~and~~ initiate programs and projects that mitigate water supply shortages for domestic, rural, municipal, industrial, and agricultural uses; ~~set up to relieve rural and municipal water shortages, share and relocate feed stocks,~~ and assist vulnerable populations with heat induced health risks.	N.D. Department of Agriculture – Worked with one emergency manager conduct mitigation plan review regarding impact of drought on the community but nothing else of measure. Leverages an online database called Haynet & Grazenet to assist producers. NWS – Provides information statements on drought. NWS offices in North Dakota collaborate with the North Dakota State Climatologist regarding drought across the state. The NWS also participates in meetings of the Drought Task Force. State Water Commission – Activates, as required, its Drought Disaster Livestock Water Supply Program to mitigate the impacts of drought on ranchers and farmers. NDDOT —Waives applicable trucking rules to facilitate hay movement as well as potentially facilitating more haying of state highway ditches.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			Division of Community Services – Assists with identifying resources to help with recovery. NDDES – Coordinates with local and tribal mitigation planners to identify communities' vulnerabilities to drought encourage consideration of drought mitigation strategies.
Objective 6.2: Reduce the vulnerability of homes and businesses from approaching wildland fires.			
2014-26	Firewise & Community Wildfire Protection Plan	Promote the Firewise and Community Wildfire Protection Plan (CWPP) program and public education. The North Dakota Forest Service can provide financial and technical assistance regarding Community Wildfire Protection Plans. These plans specifically address mitigation for wildland fires and may be required for jurisdictions to receive wildfire mitigation funding.	NDFS – Continues to promote Firewise and Community Wildfire Protection Plans. A Barnes County Community Wildfire Protection Plan (CWPP) was developed in 2016 identifying issues of high priority including: reducing fuel loads, improving fire prevention in the Wildland Urban Interface (WUI), prevention education, and directing outreach to rural landowners at risk. The Barnes County Soil Conservation District (SCD) is implementing a WUI grant to provide cost-share opportunities to landowners for creating defensible space around homes and structures, providing Firewise assessments, developing Forest Resource Management Plans focusing on guiding the successful establishment of young fuel breaks, and updating the Barnes County CWPP. The project also involves coordinating with the communities of Hastings, Kathryn, Litchville, Sanborn, Valley City and areas surrounding Lake Ashtabula & Bald Hill Dam recreation areas in meeting their fuel reduction priorities as listed in the Barnes County CWPP, and providing education materials to county residents by mailings, radio spots, newsletter/newspaper articles, information on the district web-site, and one-on-one contacts, with the overall goal of reaching 5,000 residents.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			CHANGE: N.D. Fire Marshal's Office and Bureau of Indian Affairs were added to reflect these agencies' involvement with this mitigation action. ND Fire Marshal's Office -- Promotes wild land fire protection philosophies through public education programs like FireWise, National Wild Fire Community Preparedness Day, and Take Action, Teens for Wild Fire Safe Communities. These programs are distributed throughout the North Dakota fire service. Bureau of Indian Affairs -- Updating fire management plans, which haven't been updated since 1998. This major undertaking include meeting today's policy and moving toward incorporation such as GIS. Plan to share information with local and tribal mitigation planners.
New 2016-27	Hazardous Fuels Reduction	*CHANGE: Mitigation action added by the N.D. Forest Service to reflect the need for hazardous fuels reduction as a mitigation action.* The ponderosa pine hazard fuel mitigation site is within a 3,530 acre area representing the northeastern most extent of ponderosa pine in North America and one of two native pine areas in North Dakota. Adjacent private lands encompass an additional 2,000-3,000 acres of ponderosa pine. The project provides risk mitigation by removing	*CHANGE: Mitigation action added to reflect the role of the N.D. Forest Service in hazardous fuels reduction.* N.D. Forest Service -- Forest Stewardship Management plans were created by NDFS Forest Stewardship Staff by integrating landowner objectives and outlining forest management/hazardous fuels reduction prescriptions. The stand prescriptions and objectives are reviewed by Forest Stewardship and fire staff and then certified NDFS fire staff sawyers implement the prescriptions by pruning, thinning and removing timber and brush in designated areas. Additional NDFS fire staff utilizing both mechanical and handwork, piled material in strategic locations for burning at a later date. Cutting activities were aimed at opening the canopy and removing the ladder fuels to prevent another catastrophic wildfire

Action ID #	Action Title	Action Description	2014-2016 Progress Report
		hazardous fuel thus providing a higher degree of protection to communities and homes that may be at risk.	and recreate a more fire adapted ecosystem. The areas targeted are adjacent to USDA Forest Service lands identified as having a potential for a large catastrophic fire directly impacting local landowners.
Goal 7: Reduce impacts of human-caused threats to people and property.			
Objective 7.1: Prevent intentional acts of terrorism or crime and accidental acts through observations, regulations, and enforcement.			
2014-28	Cyber Security Threats	*CHANGE: Reflects effort to expand security concerns to include adversarial threats.* Work to educate industry and public on ways to mitigate cyber threats affecting personal, private, and state security and other sensitive information. This outreach/ education would also include adversarial (i.e. Highly Violent Extremist (HVE), Terrorism, or Hacktivists, etc.…) threats (purposed or imminent).	SLIC—Provides needed cyber security analysis and has expanded to include additional staffing, as noted in the ITD section below. ITD – Dedicated a cyber security specialist to support the SLIC. The 64th Legislative Assembly approved the addition of an ITD Security cybersecurity position. Previously, the ITD Security proactively partnered with the SLIC by rotating staff members in/out of the SLIC to determine needs and analyze data. In addition, ITD Security and the SLIC have established formal communication channels to analyze cyber-related incidents impacting entities within the state's borders. These efforts are in conjunction with the NDDES, ND Bureau of Criminal Investigation, and the U.S. Department of Homeland Security (USDHS). ITD Security has staff with a secret-level security clearance through the USDHS.
2014-29	Secure Electronic Systems	Procure and install systems as well as adopt processes that promote secure electronic systems.	ITD – On April 4, 2014, ITD published the ITD Cybersecurity Framework based on NIST standards to prioritize to ensure confidentiality, integrity and availability of data entrusted to the State of North Dakota. The five functions of the framework used to protect the data are Identify, Protect, Detect, Respond and

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			Recover. In addition, ITD has employed next generation firewalls to protect the data, implemented using industry best practices. N.D. State and Local Intelligence Center, NDDES – Enact processes to ensure security; coordinate with ITD as the provider for the state's information technology infrastructure.
2014-30	Protection of Critical Communication	*CHANGE: Reflects effort to expand security concerns to include adversarial threats.* Mitigate potential loss of critical communications by retrofitting sites with protective security measure. This outreach/ education would also include adversarial (i.e. Highly Violent Extremist (HVE), Terrorism, or Hacktivists, etc.) threats (purposed or imminent).	NDDES—Coordinates with ITD to ensure protective measures are in place at State Radio tower sites. Educates the public and private sectors regarding protection of critical communications through the Critical Infrastructure Protection Program to address HVE incidents or threats. Protective measures include such actions as target hardening, card access, installation of fences, use of secure cameras, guards and safety bollards. ITD – Employs stringent physical security measures at the enterprise Primary Data Center, Secondary Data Center, Agency Data Center and other ITD-controlled facilities. These measures include ITD ID Badges, ITD Visitor Badges, and video surveillance cameras. *CHANGE:* Agencies added to reflect the initiative by federal and state officials to encourage participation of the SLIC in the mitigation planning process. SLIC – Developing a strategy which involves leveraging opportunities to educate and discuss adversarial (HVE or Terrorism) threats (purposed or imminent) with critical facility operators.

Action ID #	Action Title	Action Description	2014-2016 Progress Report
			USDHS -- Promote the use of target hardening measures (i.e. perimeter fencing, CCTV, alarms, entry control procedures, robust cyber security systems and software applications, security staffing at key sites etc.). Collaborate and / or assist in conducting site vulnerability and security assessments to assess security postures, uncover vulnerabilities and present options for consideration to mitigate vulnerabilities.
2014-31	Hazardous Materials Storage and Disposal ~~Waste Collection Program~~	*CHANGE: Revised to more accurately reflect intent of the mitigation action and effort to expand security concerns to include adversarial threats.* ~~Promote and maintain a statewide hazardous waste collection program and disposal regulations may reduce the amount of hazardous chemicals that can contaminate drinking water supplies. Similarly, stricter regulations on storage tanks containing hazardous materials may reduce the chances of a spill.~~ Promote and maintain available hazardous materials and waste collection & disposal programs and provide enforcement and education on storage and use regulations to reduce the potential for intentional or unintentional spills or releases. This outreach/ education would also include adversarial (i.e. Highly Violent Extremist (HVE), Terrorism, or Hacktivists, etc….) threats (purposed or imminent).	NDDA – Operates Project Safe Send which is a safe, simple and non-regulatory program that helps people safely and legally get rid of unusable pesticides free of charge. Since 1992, thousands of people have brought in over 4 million pounds of pesticides to Project Safe Send. Additionally, inspectors and staff from NDDA Pesticide and Fertilizer Division provide compliance assistance & enforcement for distributers, producers and applicators to ensure products are stored, sold and applied safely according to registered labels. NDDoH – Enforces state regulations regarding the generation, storage, treatment, transportation and disposal of hazardous waste. The agency also provides technical and monitoring assistance of sites impacted by improper releases. Environmental scientists visit up to 50 sites a year and also monitor ongoing cleanup efforts. *CHANGE: The SLIC was added to reflect its role in education for this mitigation action.* SLIC – Developing a strategy which involves leveraging opportunities to educate and discuss adversarial (HVE or Terrorism) threats (purposed or imminent) with hazardous waste collection program managers.

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2014-32	Transportation Engineering & Systems	*CHANGE: Reflects initiative by federal and state officials to encourage participation of State and Local Intelligence Center in the mitigation planning process.* Improve transportation infrastructure through engineering and the subsequent road, railway, and barrier designs could reduce transportation accidents and prevent mass casualty and hazardous material release incidents. Managed transportation through the implementation of hazardous truck routes and bypasses may prevent hazardous material releases, particularly in populated areas. Regulations related to railway speeds could reduce the probability of accidents in urban areas and provide consistency across the state. Additional considerations could be given to those communities experiencing growth or development in industries requiring heavy use of the transportation systems. This outreach/ education would also include adversarial (i.e. Highly Violent Extremist (HVE), Terrorism, or Hacktivists, etc.…) threats (purposed or imminent).	DOT -- Continues to constantly work on mitigating hazards to include additional warning signs to call attention to unexpected conditions not readily apparent; added left turn arrows at signals; added roundabouts, rumble strips/rumble strips, safety edges on pavement; pursue educational opportunities and efforts to reduce secondary crashes. SLIC – Developing a strategy which involves leveraging opportunities to educate and discuss adversarial (HVE or Terrorism) threats (purposed or imminent) with local and tribal public works operators and railroad operators. NDDoH – Enforces regulations designed to ensure hazardous waste is transported in proper containers and accompanied by the appropriate paperwork, from labeling to manifests. N.D. Aeronautics Commission— Provide technical assistance to the state's 89 public use airports to focus on infrastructure solutions at the airports. The Aeronautics Commission plays an integral coordination role with the airports, the Federal Aviation Administration and project sponsors. ND Department of Mineral Resources – Provides support as a member of the State Emergency Response Commission and contributes to the mission and activities. Oil and Gas Division staff enforces rules and regulations related to the safe development of mineral resources in the state. *CHANGE:* Agencies added to reflect the initiative by federal and state officials to encourage participation of the SLIC in the mitigation planning process.

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			USDHS -- Promote the use of target hardening measures (i.e. perimeter fencing, CCTV, alarms, entry control procedures, robust cyber security systems and software applications, security staffing at key sites etc.). Collaborate and / or assist in conducting site vulnerability and security assessments to assess security postures, uncover vulnerabilities and present options for consideration to mitigate vulnerabilities. SLIC – Developing a strategy which involves leveraging opportunities to educate and discuss adversarial (HVE or Terrorism) threats (purposed or imminent) with hazardous waste collection program managers.
Goal 8: Reduce impacts of communicable disease, geological hazards, transportation accidents, urban fire or structural collapse, and windstorm to people and property in North Dakota.			
Objective 8.1: Reduce the human impact of all accidents, incidents and disasters by promoting readiness and resilience.			
2014-33	Communicable Disease	Support the monitoring, preventive measures, and public education of communicable diseases to mitigate the impact of pests and pathogens.	N.D. Department of Health and N.D. Department of Agriculture, Division of Animal Health – Created a brochure on bovine tuberculosis in humans and animals for livestock producers. NDDoH and the Animal Health Division also gave presentations to producers, human health professionals and animal health professions on bovine tuberculosis in humans and animals. NDDoH and the Animal Health Division also gave presentations to producers, human health professionals and animal health professions on avian influenza and other zoonotic diseases. US APHIS – Actively monitors potential and actual incidents of pests in coordination with the N.D. Department of Agriculture. APHIS also

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			provides technical assistance to state mitigation plan development. APHIS coordinated with the Cherokee Nation to ensure wood transported to the Standing Rock Sioux Reservation was not from quarantined areas in Oklahoma where emerald ash bore is present. ND Stockmen's Association – Supports education efforts to mitigate the spread of livestock diseases.
2014-34	Community Resiliency	Increase community resiliency through planning that emphasizes worker and first responder safety; and promotes preventive health for new populations.	NDDHS – Coordinated with partner agencies to support worker and first responders with Disaster Mental Health services. DOT- Conducts traffic incident management training on the local level. NDDES --Initiated the following campaigns such as: Get Ready for Winter Weather (Posted 10/27/2014); Hazardous Materials Conference Held (Posted 10/31/2014, 2016); and North Dakotans urged to Resolve to be Ready (12/31/2014). N.D. Department of Human Services NDDoH and N.D. Workforce Safety and Insurance – Contributed to development of the State of North Dakota Recovery Mission Area Operations Plan and branch annexes to ensure they reflected this mitigation action.

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2014-35	StormReady Program	Promote use of NOAA's National Weather Service's StormReady Program. The StormReady program will help mitigate the impacts of storms by giving communities the communication and safety skills needed to save lives and property, before and during the event. StormReady helps community leaders and emergency managers strengthen local safety programs.	NWS, NDDES, County and Tribal Emergency Managers – Continue to promote the program and encourage local participation. The National Weather Service Offices serving the state of North Dakota continue to expand the StormReady Program across the state. As of November 2, 2016, there were 49 StormReady sites in North Dakota. A current listing of North Dakota StormReady sites can be found at: http://www.stormready.noaa.gov/com-maps/nd-com.htm.
2014-36	Public Education Programs	*CHANGE: Reflects lacks of involvement and/or interest by higher educational facilities to pursue Disaster Resistant Universities.* *Reflects initiative by federal and state officials to encourage participation of State and Local Intelligence Center in the mitigation planning process.* Promote educational activities designed to protect the public to include such programs such as Weather Spotter Training, Community Emergency Response Teams and Adversarial Threat ~~and Disaster-Resistant University programs~~.	NWS -- Collaborated with local emergency managers to conduct SKYWARN training classes during the spring of 2014. Conducted SKYWARN C training classes during the springs of 2015 and 2016. SKYWARN is a volunteer program established by NOAA's National Weather Service with partner organizations. In North Dakota, SKYWARN spotters consist mostly of emergency response officials and amateur radio operators. Each year, SKYWARN spotters donate their time and equipment to provide information which helps the NWS issue more timely and accurate severe weather warnings. A series of YouTube videos consisting of material from a SKYWARN training session were created in 2016. The material is presented by NWS Bismarck Warning Coordination Meteorologist. The video series was created to reach those interested in SKYWARN, but are not able to attend a training session in person. The videos can also serve as a refresher for those wanting to review the material. The

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			videos are available on the NWS Bismarck SKYWARN page: http://www.weather.gov/bis/skywarn. NDDES – Continues to support SKYWARN opportunities; offered training for staff members. NDDoH – Provides training for the Public Health Emergency Volunteer Reserve/Medical Reserve Corps. Deploys teams to incident sites and to community events. *CHANGE:* Agencies added to reflect the initiative by federal and state officials to encourage participation of the SLIC in the mitigation planning process. NSLIC – Developing a strategy which involves leveraging opportunities to educate and discuss adversarial (HVE or Terrorism) threats (purposed or imminent) with the public. USDHS -- Promote the use of target hardening measures (i.e. perimeter fencing, CCTV, alarms, entry control procedures, robust cyber security systems and software applications, security staffing at key sites etc.). Collaborate and / or assist in conducting site vulnerability and security assessments to assess security postures, uncover vulnerabilities and present options for consideration to mitigate vulnerabilities. Provide Active Shooter Training when requested for public and private infrastructure stakeholders following the "Run, Hide, Fight" methodology. Provide infrastructure stakeholders resources in developing and facilitating protocols and training methodologies from the U.S. DHS Active Shooter Resources website: https://www.dhs.gov/active-shooter-preparedness.